

ACS POLICY AND POSITION PAPER ON GME REFORM

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100+ years

AMERICAN COLLEGE OF SURGEONS

*Inspiring Quality:
Highest Standards, Better Outcomes*



GME Taskforce Workgroup

Michael J. Zinner, MD, FACS—Chair
Amalia L. Cochran, MD, FACS
Brian J. Daley, MD, FACS
Henri R. Ford, MD, FACS
Julie A. Freischlag, MD, FACS
Mary E. Klingensmith, MD, FACS
Anton N. Sidawy, MD, FACS
Steven M. Steinberg, MD, FACS

American College of Surgeons Staff

David B. Hoyt, MD, FACS
Patrick V. Bailey, MD, FACS
Christian Shalgian
Matthew Coffron
Carrie Zlatos

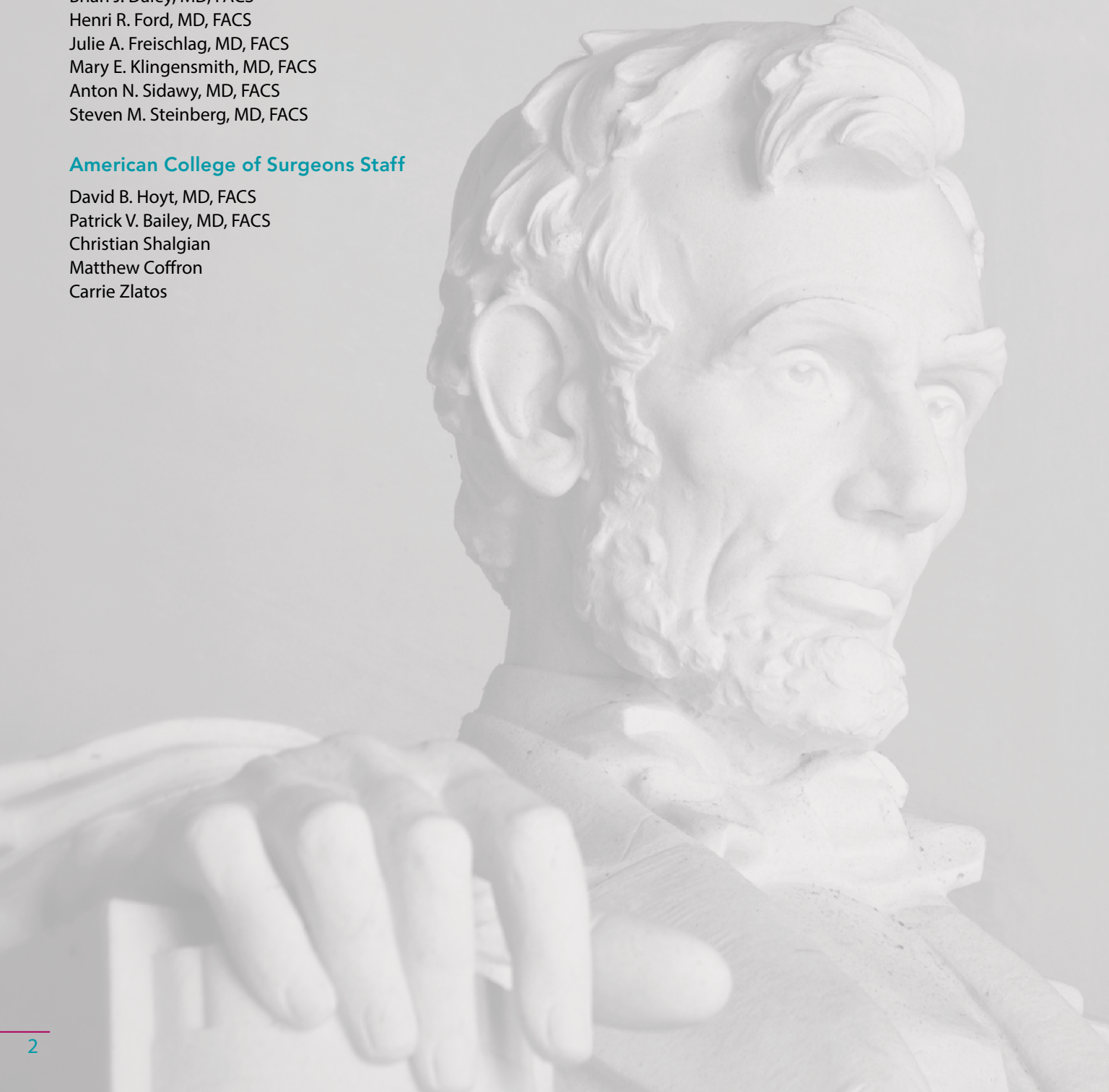




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EXECUTIVE SUMMARY

The American College of Surgeons (ACS) was founded more than a century ago as an organization focused on quality. Ensuring that surgeons receive the highest quality of training can lead to fewer complications and better outcomes, thus lowering the cost of care. It is absolutely vital that graduate medical education (GME) training programs result in patient access to the highest quality physicians and the ACS therefore intends to be an active participant as Congress considers reforms to the GME system. The ACS strongly believes that a GME system built on a solid foundation of accurate and actionable workforce data is THE critically necessary prerequisite step in the process of collective efforts to make rational, informed decisions directed at building the optimal health care workforce that our nation needs. The ACS also maintains that in order to preserve the innovation and excellence for which our country's medical system is known, GME should continue to be supported as a public good.

Medicine is unlike other business and professional sectors of our nation's economy that routinely build training costs into the price of goods and services. The role of government as a major purchaser and price-setting body, along with the highly regulated nature of the health care sector, makes medicine distinct. These characteristics justify the continuation of federal support of GME program training. However, transparent and accountable use of public funds is paramount toward the goal of ensuring a sufficient and capable physician workforce.



What Should Reform Look Like?

The ACS strongly believes that any meaningful discussion of GME reform must take into account the following four essential components:

- **Workforce**
- **Finance**
- **Accountability**
- **Governance**

The College proposes that in order to accomplish meaningful reform of GME, Congress consider the following steps that are aligned with these four essential components.

Support Health Care Workforce Data Collection and Research

Assuming that the ultimate goal of GME reform is a “needs-based” or “demand-side” workforce, the ACS maintains that accurately collected and analyzed workforce data are the cornerstone of such efforts, and legislation authorizing and appropriating an entity to accomplish such is absolutely necessary.

At present, our health care system is in dire need of accurate data. The ACS supports federal funding for an entity to study current health care workforce supply and distribution and to project workforce demands for the future. These data should be collected on a periodic and repetitive basis, and the collection undertaken in consultation with relevant stakeholders.

Maintain Current Levels of GME Financing and Appropriate Temporary Additional Funds to Support a GME Modernization and Quality Improvement Program

The ACS strongly supports the creation of a temporary GME Modernization and Quality Improvement Fund. The College believes that federal support for the training of physicians should be maintained and temporary additional funds should be provided for innovative efforts to modernize the system and improve the measurement and quality of the resulting product. Using a modernization fund to develop the standards and metrics necessary to measure and assess progress toward the goal of obtaining the correct number and mix of physician specialties along with trainee readiness in graduate medical education could ease the transition and pay dividends in the long term.

Combine IME and DGME into a Single Stream of Funds

Accountability and transparency must be built into the system, not only to certify that funds are being spent appropriately to support the training of physicians, but also to ensure quality and readiness of the physicians emerging from training. The ACS believes a single stream

of funds for both indirect medical education (IME) and direct graduate medical education (DGME), managed by a regional governance body accountable for receipt of those funds, would remedy much of the complexity inherent in the current system. In the College’s view, training entities should be held accountable in a manner proportional to their ability to influence the desired outcome of GME policy goals. Regional governance bodies provided with funding to support GME directed at meeting identified workforce needs in their region would be well positioned to hold those receiving funding accountable for the type and quality of the resultant workforce product.

Move toward a Regionalized Governance System

The ACS believes greater efficiency and accuracy of resource deployment can be achieved through the creation of a regionalized GME system, under the oversight of an independent regulatory agency. The Federal Reserve System’s central Board of Governors and its 12 regional Boards of Directors is an example of such a governance structure. Though able to operate somewhat independently, the Board of Directors would remain under the general policy oversight of the Board of Governors. In a regional governance system, training needs and funding decisions would be determined by the individual region’s directors based upon workforce data and thus be reflective of unique population needs and workforce requirements.

Regionalization would facilitate targeted interventions to address shortages projected in specific geographic areas by implementing a system of GME financing that is flexible, creates the proper incentives, and enhances accountability. While training programs are not able to gear up and down on a moment’s notice, it is possible to take graduated and rational steps to ultimately shift financing to programs that produce high quality physicians trained in the specialties of need within various geographic regions.

For more information on the ACS’ proposal, these essential components are outlined in deeper detail in the body of the policy and position paper.



BACKGROUND

Federal support for graduate medical education (GME) as we know it in the modern era began in 1965 with the passage of legislation implementing Medicare. Justification for including expenditure for GME in that federal entitlement program can be found in a 1965 Senate report from the 89th Congress, which states:

“Educational activities enhance the quality of care in an institution, and it is intended, until the community undertakes to bear such education costs in some other way, that a part of the net cost of such activities (including stipends of trainees, as well as compensation of teachers and other costs) should be borne to an appropriate extent by the hospital insurance program.”¹

Today, total public funding expenditures for GME are estimated to be approximately \$15 billion per year.² Of that total, approximately \$10 billion comes from the Medicare program. The purpose of all public GME funding is to appropriately support the necessary, public good of ensuring access to a well-trained medical workforce. However, in Congress’ ongoing efforts to forestall depletion of the Medicare trust fund, GME is frequently mentioned as a potential object for reform initiatives intended to maximize the efficacy of federal dollars spent, and to also potentially generate savings.

Academic authorities often subdivide their discussions on the topic of GME reform into four substantive areas: workforce, finance, accountability, and governance.³ Essentially, a rational mechanism by which to reform GME is encapsulated in the concept of the accurate collection and analysis of workforce data in order to determine what type of workforce is required, and then directing funds toward producing such a product. Recipients of GME funds, for example training entities, should be held financially accountable for meeting the identified workforce needs both in terms of specialty type and readiness to enter practice.

A variety of governance structures have been discussed as options for the body charged with oversight and management of the GME system. Due in part to regional variations in need, the American College of Surgeons (ACS) believes there may be significant benefits to a regionalized system for data collection, analysis, and GME governance. Regional governance bodies provided with funding to support GME, directed at meeting identified workforce needs, would be well positioned to hold those receiving funding accountable for both the specialty type and quality of product subsequently produced.

As defined in the first of our six principles on GME reform, the ACS strongly maintains that in order to preserve the innovation and excellence for which our country’s medical system is noted, GME should continue to be supported as a public good. In an effort to offer proactive reforms that will facilitate that goal, we have developed specific policy proposals based on the remaining five principles listed on page 7.

1 S. Rep. 404, 89th Cong., 1st Sess., p. 36 (1965), and H.R. 213, 89th Cong., 1st Sess., p. 32 (1965).
2 Institute of Medicine of the National Academies. *Graduate Medical Education That Meets the Nation’s Health Needs*. Summary and Introduction. Washington, DC: The National Academies Press; 2014. Available at: <http://www.nap.edu/read/18754>.
3 Spero JC, Fraher EP, Ricketts TC, Rockey PH. *GME in the United States: A Review of State Initiatives*. Cecil G. Sheps Center for Health Services Research, The University of North Carolina at Chapel Hill. September 2013. Available at: http://www.shepscenter.unc.edu/wp-content/uploads/2013/09/GMEstateReview_Sept2013.pdf.



ACS PRINCIPLES ON GME REFORM

Broad reforms to the way in which GME is funded and administered are necessary and overdue to ensure that our nation is able to produce a physician workforce capable of meeting the needs of the U.S. population. In broadest terms, the ACS believes solutions must be flexible, nimble, patient-centric, and most importantly, evidence-based. To that end, we have crafted the following principles for GME reform:

1. GME should be supported as a public good

Education and training are essential mechanisms in the process by which new medical discovery and excellence in new therapy are achieved. To foster and preserve the innovation for which our country's medical system is noted, graduate medical education should continue to be supported as a public good.

2. Surgical GME has unique needs

Surgical graduate medical education has unique needs linked to the skills training required for an additional set of technical competencies. Accordingly, in order to acquire and achieve mastery of those skills, it is imperative that those unique training needs be recognized.

3. Needs-based, demand-side workforce is essential

Reforms should focus on creating a system that produces the optimal workforce of physicians to meet our country's medical needs. The population of the United States deserves consistent service across the board.

4. Funding should serve as a lever to meet workforce needs

Given that the practice of medicine is dynamic, and, therefore, what we need today is not necessarily what we will need in 10 years, the system should be nimble enough to adjust rapidly to the changing medical landscape. Methodologies to project workforce needs will need to be developed and continually refined as data become available. This methodology should be used to distribute funding in a way that meets workforce needs, not vested political or financial interests.

5. Accountability and transparency should be hallmarks of the system

There must be accountability and transparency built into the system, not only to certify that funds are being spent appropriately to support the training of physicians, but also to ensure quality and readiness of the physicians emerging from training. A hybrid governance system, incorporating public and private interests, with articulated goals and measured outcomes, should be created.

6. Incentivize performance and innovation

Programs that produce high-quality graduates in an efficient manner that are responsive to workforce needs should be rewarded through financial incentives or higher levels of support. Similarly, a separate funding stream should be created to support innovation in GME and thus incentivize higher quality training.



PROPOSED STEPS

In accordance with our principles, the **ACS recommends that the following concrete steps be taken** to both improve our knowledge of the U.S. physician workforce and to inform efforts to reform our GME system in a manner that ensures an adequate physician workforce to meet the country's disparate health care needs.

1 **Support health care workforce data collection and research**

The U.S. is in need of more accurate data on our current health care workforce, its distribution and capabilities, as well as accurate, actionable data on the country's likely future workforce needs. Accordingly, the ACS believes the periodic, repetitive collection and analysis of workforce data on both a regional and national basis should be a top priority. Once collected, that data should then be analyzed and used to inform future decisions on how and where GME funds are expended. Because the country is in dire need of accurate data on the health care workforce, its geographic distribution and capabilities, as well as an assessment of the future workforce needs to meet "demand-side" requirements, we

support funding of a body to conduct the work designated to the National Health Care Workforce Commission as authorized in Section 5101 of the Patient Protection and Affordable Care Act (ACA). The commission was charged with studying current health care workforce supply and distribution, to project workforce demands 10 and 25 years in the future, and to compare those projected demands to our current education and training capacity. The ACS strongly believes that workforce data should be collected on a repetitive and periodic basis, and that the body or bodies charged with such be required to consult with stakeholders in order to ensure accuracy in both the collection and subsequent analysis.



2

Maintain current levels of GME financing and appropriate temporary additional funds to support a GME modernization and quality improvement program

The College's first principle on GME reform states that the education and training of physicians are essential mechanisms in the process by which new medical discovery and excellence in new patient therapy are achieved. The obvious additional public good that is a product of that system is a well-trained physician workforce to serve the nation's health care needs. For these and other reasons listed below, we assert and advocate that GME should continue to be supported as a public good and that funding be maintained at current levels.

The ACS supports the recommendation from the 2014 Institute of Medicine (IOM, now the National Academy of Medicine) report, *Graduate Medical Education That Meets the Nation's Health Needs: Recommendations, Goals, and Next Steps*, that calls for creating a fund to "develop and evaluate innovative GME programs, to determine and validate appropriate GME performance measures, to pilot alternative GME payment methods, and to award new Medicare-funded GME training positions in priority disciplines and geographic areas."² In distinction from the IOM's recommended funding mechanism for such a fund, ACS supports appropriating additional funds on a *temporary* basis. Those temporary funds would be utilized to support research into innovative alternatives to our current GME training methods, such as simulation systems, and also to support pilot projects charged with the development of metrics to measure program efficiency and effectiveness as well as the development of quality metrics to gauge the end products of GME training.

Because of the current projected shortages in the number of physicians, and the long lead times needed to train them under the current system, the ACS recommends that the funds necessary to support such modernization and quality improvement endeavors in GME training should supplement, not supplant, any of the current funding designated for GME training; that is, the fund should not be created in a budget neutral fashion. Such temporary provision of additional funds should be seen as an investment in improving the efficiency of the system and addressing projected shortfalls in workforce needs.

The ACS believes that temporary additional funding is necessary and justified to address shortcomings in the existing system while creating new and improved mechanisms for the future. It is imperative that every effort be taken to ensure the overall number of physicians being trained increases in ways that produce the appropriate mix of physician specialties as determined by data derived from scientific assessments of current and future workforce needs. Once accurate data are collected and analyzed, designated governance entities should use those data to make decisions on which types of training positions are funded. Data driven solutions to the current problems of composition and readiness to practice should be the goal of the initiative to ensure that Medicare GME dollars are expended in the most efficient, effective, and transparent way possible.



PROPOSED STEPS *(continued)*

3 **Combine direct GME (DGME) and indirect medical education (IME) into a single stream of GME funds**

Consistent with our principles that funds be used in a transparent and accountable way, the ACS is in firm agreement with the recommendation from the 2014 IOM report and other sources that all GME funding be coalesced into a single funding stream.² The ACS strongly believes that transitioning to a single stream of funding is an opportunity to increase efficiency, transparency, and accountability and to reduce physician shortages. However, given current and projected shortages in many specialties, we caution that this important reform should not be seen as an opportunity for reducing the federal support provided by Medicare. As stated previously, overall federal support for the training of physicians should be maintained, and additional funds should be provided for innovation within the system.

While it is relatively easy to account for the 30 percent of the Medicare GME expenditure utilized to provide actual financial support for residents and their attending physician instructors in the form of DGME funds, the ACS acknowledges that

there are profound concerns relative to accounting for the funds provided to teaching hospitals and other training entities in the form of IME payments. The IME payments, made to training institutions as add-ons per Medicare patient discharged, were intended to compensate hospitals and institutions for the increased cost of care associated with GME. However, opacity and complexity in the current funding system have led to concerns relative to transparency and accountability for IME payments. While acknowledging that this lack of transparency regrettably makes IME payments an easy target, we feel strongly that limiting reform efforts solely to cuts in IME funds would be counterproductive and also represent a missed opportunity to address more comprehensive reform. The ACS asserts that a single stream of funds is an essential component of a comprehensive effort to reform the GME system and is consistent with Medicare's policy goal of moving toward paying for quality and value.



4

Move toward a regionalized GME governance system

Creation of a regionalized GME system, under the auspices of an independent regulatory agency, charged with overseeing governance and training may be one way to achieve greater efficiency and accuracy in deploying scarce resources. A regional system for **undergraduate** medical education has been successfully implemented through a cooperative agreement between the states of Washington, Wyoming, Alaska, Montana and Idaho since 1971.⁴ The Utah Medical Education Commission (UMEC) provides a template for the role, authority and responsibilities of a regional GME governance system.⁵ For the purposes of GME governance on the national level, the entity envisioned would carefully blend both public and private interests. An example of such a structure is the Federal Reserve System's central Board of Governors and its 12 regional Boards of Directors which, though able to operate somewhat independently, remain under the general policy oversight of the Board of Governors. Regional training needs and funding decisions in a regionalized GME system would be determined by the individual region's directors based upon workforce data collected from and therefore unique to the region's population and workforce requirements. Such a regional governance structure has the potential to be much more nimble, responsive, and accountable to the needs of various regions of the country as members of the regional Board would be more familiar with the unique demographics of the population, regional practice patterns, and educational training resources available in their respective regions.

Through periodic workforce data collection, the regional Boards would also be well positioned to direct GME funds toward meeting the unique needs of the population of their region. The regional Board of Directors would be responsible for organizing GME training in their region into training collaboratives including all institutions and training entities in the region engaged in GME. All institutions and entities participating in such

collaboratives would have individual roles to play and would bear some responsibility toward producing the appropriate physician workforce necessary to meet the population-based, demand-side needs as determined by the regional data collection and analysis. Regionalization could thus facilitate targeted interventions to address shortages projected in specific geographic areas by implementing a system of GME financing that is flexible, creates the proper incentives, and enhances accountability. Because federal resources are limited, the ACS believes it is imperative that the public funds designated for GME training are directed toward solutions that can meet the disparate workforce needs found in the various geographic regions of the country.

While it is acknowledged that training programs are unable to gear up or down on a moment's notice, we do believe it is possible to take gradual and rational steps toward the ultimate goal of shifting federal financing to programs that produce high quality physicians trained in the specialties needed within the various geographic regions. As envisioned, nothing in such a process would prohibit institutions or other entities engaged in GME from funding additional slots on their own by using funds from other sources.

In addition to the template of independent regulatory agencies like the Federal Reserve, we believe that concepts derived from the success of existing regionalized care systems, such as the Health Resources Services Administration's United Network for Organ Sharing and regionalized systems of trauma care, provide evidence of success with regionalization, as well as additional lessons that are applicable in the development of regionalized systems for GME governance.

4 UW Medicine. WWAMI Regional Medical Education. Available at: <http://uwmedicine.org/education/wwami>.

5 Utah Medical Education Council. Welcome to The UMEC. Available at: <http://www.utahmec.org/>.



RATIONALE FOR RECOMMENDATIONS

In accordance with the rationale offered by other academic authorities discussed previously, the ACS has arrived at these recommendations **based on our strong belief** that any meaningful discussion of GME reform must take into account the following four essential components outlined earlier:

- Workforce
- Finance
- Accountability
- Governance

WORKFORCE

The critical need for accurate and actionable workforce data

The demand for health care services is expected to increase in the coming decades due to several factors, including a growing and aging population, an increase in the chronic illnesses attendant with that aging population, as well as the millions of individuals newly eligible for health insurance under the Affordable Care Act.^{6,7} The number of active general surgeons in the U.S. is approximately 19,000.⁸ The updated physician workforce study prepared for the Association of American Medical Colleges (AAMC) released in April 2016, predicts that the nation will face a shortage of 61,700–94,700 physicians by the year 2025. The study estimates a projected shortfall of 14,900–35,600 primary care physicians and 37,400–60,300 non-primary care physicians, including surgeons.⁹

Though some groups would assert that the nation's predicted physician workforce shortage can be effectively remedied by addressing only the shortfall in primary care providers,¹⁰ the aforementioned study clearly indicates that such a one-dimensional solution would be inadequate; that is, simply increasing the number of primary care providers would fail to satisfy the demand for specialists whose cognitive and technical expertise

are needed to ensure ready access to the type of sophisticated medical care that the American public has come to expect.¹¹ Per AAMC president and chief executive officer Darrell G. Kirch, MD, "The doctor shortage is real—it's significant—and it's particularly serious for the kind of medical care that our aging population is going to need."¹²

The present GME training model has persisted for more than 50 years in spite of the fact that innumerable, well described and documented workforce disparities exist between rural, urban, and other geographic areas. Additionally, local decisions about expanding GME programs within a given training entity receiving GME funds are often made based on a desire to increase the number of positions in training programs associated with cost centers that are strong revenue producers rather than those that actually address the health care needs of the patient population being served.

As noted previously in this primer, the federal government has been funding the vast majority of GME in the U.S. since the inception of Medicare in 1965. The purpose of this federal funding is to support the public good of ensuring access to a well-trained

6 Hofer AN, Abraham JM, Moscovice I. Expansion of coverage under the Patient Protection and Affordable Care Act and primary care utilization. *Milbank Q.* 2011;89(1):69-89.
7 Jacobsen LA, Kent M, Lee M, Mather M. America's aging population. *Population Bulletin.* 2011;66(1). Available at: <http://www.prb.org/pdf11/aging-in-america.pdf>.
8 Ricketts TC. *Supply and Demand for General Surgeons: Projections from 2014 to 2030.* June 2016. Prepared for the American College of Surgeons and attached as Appendix 1.
9 Association of American Medical Colleges. *The Complexities of Physician Supply and Demand: Projections from 2014 to 2025 Final Report.* April 2016. Available at: https://www.aamc.org/download/458082/data/2016_complexities_of_supply_and_demand_projections.pdf.
10 American Academy of Family Physicians. *Aligning Resources, Increasing Accountability, and Delivering a Primary Care Physician Workforce for America.* September 2014. Available at: <http://www.aafp.org/dam/AAFP/documents/advocacy/workforce/gme/FullGME-090914.pdf>.
11 Green LV, Savin S, Lu Y. Primary care physician shortages could be eliminated through use of teams, non-physicians, and electronic communication. *Health Affairs.* 2013;32(1):11-19.
12 New physician workforce projections show the doctor shortage remains significant [news release]. Washington, DC. Association of American Medical Colleges. Available at: <https://www.aamc.org/newsroom/newsreleases/426166/20150303.html>.



medical workforce. Total public funding expenditures for GME are estimated to be approximately \$15 billion per year,² approximately \$10 billion of which comes from the Medicare program. Thus, Congress potentially has significant leverage over both the specialty type of physicians produced and the geographic location of the institutions providing their training. Cuts to this \$10 billion in Medicare GME funding are frequently mentioned in congressional budget negotiations as representing a potential source of savings and were also the target of cuts in the budgets proposed by the Obama administration.¹³

Congress previously has sought to control Medicare spending designated for GME. Most notably, the Balanced Budget Act of 1997 (BBA) placed some controls on GME training by establishing caps on GME expenditure, which limited the number of full-time equivalent (FTE) residents that would be counted for purposes of calculating Medicare GME support. The “cap” for each training entity was the number of positions on its most recently submitted cost report as of December 31, 1996. Although these caps went into effect in 1997, additional residency training positions may still be added beyond the caps, but are ineligible for additional Medicare funding.¹⁴

The 1997 caps on the number of GME slots supported through the Medicare program coupled with lack of a robust, rational governance structure that incorporates up-to-date data on workforce needs, have left us with overall physician shortages, shortages by specialty, and significant regional maldistribution.⁹ Furthermore, other policies, such as the restrictions placed on resident work hours, have had the unintended consequences of negatively affecting the readiness of new, young surgeons completing their training.¹⁵

Approximately 1,000 new general surgeons enter the workforce annually following the completion of at least five years of residency training. Despite this fact, the current fractured system leaves patients at risk, with both national and regional shortages jeopardizing timely access to surgical care. An ACS Health Policy Research Institute analysis from 2012 shows that 1,144 counties across the country, with a total population of approximately 18 million, lack access to even a single general surgeon.¹⁶

Data in the appendix (page 25) is drawn from research performed in 2016 at the University of North Carolina’s Sheps Center and commissioned and financially supported by the ACS. These data show a flattening in the supply of general surgeons out to 2030 such that any factors increasing demand for surgical services, including population growth, an aging population, or changes in productivity, will result in a decrease in the availability of surgical services to the public.⁸ The circumstance for surgical shortages is even more dramatic in the 2016 AAMC study. Under most scenarios, the total number of practicing surgeons was expected to drop resulting in an estimated shortfall for all surgical specialists of between 25,200 and 33,200 by 2025 nationwide.⁹ These updated predictions from AAMC were even more dramatic than those from only a year previous, which estimated a shortage of 23,100–31,600 surgical specialists by 2025.¹⁷

To address these shortages, the ACS has long supported lifting the cap on GME training slots as well as giving preference to programs that train general surgeons when redistributing unused slots under the cap. Furthermore, the College has supported a number of programs and legislative proposals to incentivize physicians to train in specialties experiencing shortages or to practice in geographic shortage areas once they have completed

13 For example, see National Commission on Fiscal Responsibility and Reform, *The Moment of Truth*. December 2010. Available at: https://www.fiscalcommission.gov/sites/fiscalcommission.gov/files/documents/TheMomentofTruth12_1_2010.pdf.

14 Balanced Budget Act, Pub. L. No. 105-33 (1997).

15 S Mattar, RM Minter, A Alseidi, et al. General surgery residency inadequately prepares trainees for fellowships: Results of a North American survey of program directors. *Ann Surg*. 2013;258(3):440-449.

16 American College of Surgeons Health Policy Research Institute. Total and general surgeon supply maps, 2006–2011. Available at: http://www.acshpri.org/documents/SurgeonMaps2006-2011_Oct2012.pdf.

17 Association of American Medical Colleges. *The Complexities of Physician Supply and Demand: Projections from 2013 to 2025 Final Report*. March 2015. Available at: https://www.aamc.org/download/426242/data/ihsreportdownload.pdf?cm_mmc=AAMC_-_ScientificAffairs_-_PDF_-_ihsreport.



RATIONALE FOR RECOMMENDATIONS (*continued*)

training. Some examples include the now-expired 10 percent add on payment for major surgical procedures performed by general surgeons in health professional shortage areas (HPSAs) known as the HPSA Surgical Incentive Program (HSIP), and the expansion of the National Health Service Corps to include surgeons and other physicians. Although these programs could have a positive impact individually, efforts lack coordination, and it is difficult to determine effectiveness without access to timely, reliable data and analysis of future workforce needs. A GME system built on a solid foundation of accurate and actionable workforce data is the critically necessary prerequisite step in the process of collective efforts to make rational, informed decisions directed at building the health care workforce our nation needs.

As discussed in the background section of this document, academic authorities often subdivide their discussions on the topic of GME reform into the four substantive areas of workforce, finance, accountability, and governance.³ Essentially, a rational mechanism by which to reform GME is encapsulated in the concept of the accurate collection and analysis of workforce data in order to determine what type of workforce is required and then direct funds toward producing the necessary product. Recipients of GME funds, for example training entities, should be held accountable for meeting the identified workforce needs.

A variety of options are available in developing the structure of the body charged with governing the GME system. The ACS believes that due in part to regional variations in need, a regionalized system for data collection, analysis, and GME governance may offer significant benefits. Regional governance bodies provided with funding to support GME directed at meeting identified workforce needs would

be well positioned to hold those receiving funding accountable for the specialty type and quality of product subsequently produced.

The critically important nature of accurate and actionable workforce data as the cornerstone for efforts directed at GME reform was well recognized in a hearing that the Senate Finance Committee convened in 2009 in the lead up to passage of the ACA. At that time, Fitzhugh Mullan, MD, professor of medicine and health policy, The George Washington University, Washington, DC, said, "Medicare GME should be seen as the principal instrument to shape the physician workforce of the country. This perspective would require teaching hospitals to undertake community or regionally oriented analyses of physician workforce needs and make application for training positions based on a fiduciary responsibility to train a complement of residents that corresponds to agreed-upon regional needs."¹⁸

Indeed, perhaps as a direct result of such testimony, the ACA included Section 5101, establishing the National Health Care Workforce Commission (NHCWC).¹⁹ Now codified in 42 USC 294q, the NHCWC was charged with providing data and policy advice to the federal government on the nation's health care workforce.²⁰ Although appointments for the commission were made by the Comptroller General in September 2010, funds were never appropriated and accordingly, the work never commenced.²¹ In May 2013, a total of 36 organizations sent a letter to House and Senate appropriators requesting \$3 million in funding for fiscal year 2014 to support the activities of the NHCWC.²² Under federal statute, because Congress has yet to appropriate funds for the commission, the commission was prohibited from meeting in any capacity for policy

18 Hearing before the Committee on Finance United States Senate, 111th Congress, First Session. March 12, 2009. Available at: <http://www.finance.senate.gov/hearings/hearing/?id=d82650ed-02b3-b69f-ad34-5d6c8843a5de>.

19 Patient Protection and Affordable Care Act and Health Care and Education Reconciliation Act of 2010, Pub. L. No. 111-148 & 111-152, § 5101. 2010.

20 42 U.S.C. § 294q. 2010.

21 GAO Announces Appointments to New National Health Care Workforce Commission [press release]. Washington, DC: U.S. Government Accountability Office. September 30, 2010. Available at: http://www.gao.gov/press/nhcwc_2010sep30.html.

22 Letter from 36 groups to Senator Mikulski, Senator Shelby, Representative Rogers and Representative Lowey requesting for funding for NHCWC. May 21, 2013. Available at: <https://www.aamc.org/download/343168/data/groupletterurgingfundingforthenationalhealthcareworkforcecommis.pdf>.



discussions.²³ Even though the NHCWC was never funded, there remains a legitimate and critical need for the work product it was intended to produce.

The ACS has a 103-year history of success in improving patient outcomes. At the core of the College's success in improving outcomes is the collection of robust, verified data. Assuming that the ultimate goal of GME reform is a needs-based or demand-side workforce, the ACS firmly

asserts that accurately collected and analyzed workforce data are the cornerstone of such an effort. Accordingly, the ACS strongly encourages Congress to move swiftly to identify and commission a body of independent experts and fund their work toward the completion of this critically important task. We firmly believe this action is the essential prerequisite to any further steps in broader efforts directed at GME reform.

FINANCE

Graduate medical education as a public good

The ACS' first principle on GME reform states that the education and training of physicians are essential mechanisms in the process by which new medical discovery and excellence in new patient therapy are achieved. For these reasons, the College again strongly asserts and advocates that GME should continue to be supported as a public good.

The ACS recognizes that the federal government does not fund the postgraduate education of other professions, regardless of whether they are in short supply or are thought to provide significant benefits to society; however, we would assert that federal support of GME is justified due to the unique nature of circumstances under which medicine is practiced in the U.S. The distinguishing nature of those circumstances is linked to the reimbursement of charges for medical services. Unlike other business or professional sectors in our nation's economy that can build training costs into the price of goods and services, the role of government as a major purchaser and price-setting body in health care along with the highly regulated nature of the health care sector, make medicine different and, therefore, justify the continuation of federal support. That said, the ACS maintains that the transparent and accountable use of those public funds is paramount to the goal of ensuring a sufficient and capable physician workforce to serve the health care needs of the nation's population.

Consistent with our principles that funds be used in a transparent and accountable way, the ACS firmly agrees with the IOM recommendation that all GME funding be coalesced into a single funding stream.² Support provided to individual entities engaged in providing GME training should be based on the actual cost of that training, and those costs should be accurately and consistently accounted for in a transparent manner. As noted, the ACS strongly believes that transitioning to a single funding stream is an opportunity to increase transparency, improve program efficiency, and reduce physician shortages. It is **not** an opportunity to reduce federal support. Overall federal support for the training of physicians should be maintained, and temporary additional funds should be provided for innovative efforts to modernize the system and improve the measurement and quality of the resulting product.

Although it is relatively easy to account for the 30 percent of the Medicare GME expenditure utilized to provide actual financial support for residents and their attending physician instructors, DGME, it is difficult to account for the approximately \$7 billion per year provided to teaching hospitals and other training entities in the form of IME payments. IME payments were implemented in 1983 as part of the Medicare Part A program's Prospective Payment System and are paid to training hospitals as an add-on payment per Medicare

23 Office of the General Counsel, Government Accountability Office. Principles of federal appropriations law: Third edition, volume II. Washington, DC: GAO; February 1, 2006. P. 6-34-166. (Pub No. GAO-06-382SP).



RATIONALE FOR RECOMMENDATIONS (*continued*)

patient discharged. In establishing IME payments, Congress sought to recognize and account for additional costs associated with training physicians.

IME was intended to compensate hospitals and institutions for the increased cost of care associated with GME; however, the process by which it is paid does not lend itself to accountability.²⁴ Further, as Medicare payment policy moves from paying for volume to paying for quality and value, the very intent of these IME funds comes into question, as one could argue that the goal of training the next generation of physicians should be to minimize inefficiencies and the duplication of services toward the objective of increasing value.

A CMS demonstration project in Utah provides definitive evidence of the feasibility of linking the receipt of public funds to efforts in the achievement of specific workforce goals as documented in periodic workforce surveys.³ Between 2003 and 2010, the Utah Medical Education Council (UMEC), a legislated state agency, managed the allocation of DGME funds basing disbursement on evidence obtained in periodic workforce studies. While the CMS waiver was in effect, the DGME funds were pooled and distributed by the UMEC to training entities in an effort to address evidence-based need for specific specialties.²⁵ The ACS believes that a single stream of funds, managed by a regional governance body accountable for receipt of those funds, would eliminate much of the complexity inherent in the current system. Our support for further exploration of such a template derives from the College's strong belief that the key rationale for funding GME as a public good is to provide a qualified physician workforce capable of meeting the identified needs of the population.

To ensure transparency in GME finance reform, it will be necessary to develop objective cost reporting requirements, with clear delineations established as to what costs are to be included, along with regular review and auditing of submitted reports to ensure that funds are being used for the intended purpose. The ACS also

believes that the financial support provided to each training entity should be based on the amount of training actually taking place at that institution and scaled to the specific year level of the postgraduate training provided. Payments by specialty within a region should be held to a constant rate per postgraduate year, regardless of what type of institution or training entity is supporting the GME activity. Payment should also account for reasonable factors associated with training, such as increased demands on faculty time. In addition, some geographic cost variation will need to be factored into the equation to account for differing costs of living.

The ACS supports the creation of a temporary modernization and quality improvement fund somewhat analogous to the GME Transformation Fund included in the IOM recommendations, which was intended to “develop and evaluate innovative GME programs, to determine and validate appropriate GME performance measures, to pilot alternative GME payment methods, and to award new Medicare-funded GME training positions in priority disciplines and geographic areas.”² This fund would provide support for research into innovative alternatives to existing GME training methods, including simulation systems, and would support pilot projects charged with developing metrics to determine program efficiency and effectiveness. Such pilot projects are critical to efforts toward the development of quality and readiness measures necessary to gauge the end-products of GME training.

The ACS maintains that GME financing should not only be utilized as a lever toward obtaining the correct number and mix of physician specialties to meet demonstrated workforce needs, but also as a mechanism for developing and supporting GME programs that achieve excellent results in specific training objectives and the readiness of their trainees to assume the responsibilities of independent practice. Accordingly, establishment of a modernization fund to develop the standards necessary to measure and assess progress toward that goal would pay dividends in the long term.

24 O'Shea JS. Reforming Graduate Medical Education in the U.S. *Background*. December 29, 2014. Available at: http://thf_media.s3.amazonaws.com/2014/pdf/BG2983.pdf.

25 Utah Medical Education Council. Center for Medicare & Medicaid Services (CMS) Demonstration Project. December 2010. Available at: http://www.utahmec.org/umec_CMS_demo.php.



The ACS believes research using our template, which has proven to improve outcomes, would be particularly well suited toward deriving appropriate measures of trainee readiness in surgical graduate medical education. It is well recognized and acknowledged that surgical graduate medical education requires not only the acquisition of cognitive knowledge, but also additional training directed toward the attainment of a separate, unique set of technical skills and the requisite judgment as to when it is appropriate and necessary to deploy such skills.

Because the purpose of federal support is to meet the public's need for individual, qualified medical professionals, there has been some discussion of the merit to a financing structure whereby funds are provided for the training of a specific individual trainee rather than to training entities. The ACS is concerned that such a system might prove to be overly cumbersome and too complex to implement. While acknowledging the importance of the purported benefits of increased rigor, transparency, and accountability, we are also concerned that such a system could have unintended consequences of incentivizing established programs to grow even larger in order to capture more GME training funds. Evaluation of the feasibility of such structure and the positive and negative effects over time might also be evaluated through a pilot project supported by the aforementioned GME modernization fund.

Additionally, when considering the distribution of funds, the ACS believes an analysis of the current system, which directs funds primarily to hospitals rather than training entities, should be examined with the intent of ensuring that funds intended for training are allocated to and controlled by those responsible for the training. If training entities are to be held accountable, it is imperative that the resources being allocated are received by those who will be held responsible.

The ACS also supports and is actively engaged in ongoing efforts directed at identifying potential savings within the system. For example, the surgical training community currently is engaged in collective efforts to reexamine the milestones of achievement of surgical competency. The goal is to determine whether it is feasible to alter

the number of years of surgical training required prior to attainment of a trainee's first board certification. The primary goal of this effort is to ensure that such can be accomplished without negatively impacting readiness to practice or compromising patient safety. If it is ultimately determined that this can be achieved, it is imperative that any savings derived from such efficiencies be reinvested in addressing documented shortages of surgeons or other critical workforce needs.

There has also been discussion of allowing certain qualified trainees to bill for selected services that they provide to offset the cost of training. At present, trainees in Accreditation Council for Graduate Medical Education (ACGME)-accredited programs are prohibited from billing due to concerns about perceived "double dipping." As noted previously, programs often exceed their "cap," yet are still required to account for all trainees on their cost reports. However, ALL trainees are prohibited from billing regardless of whether their specific training was created outside the caps and therefore is not being supported. Accordingly, some policymakers now argue for a system whereby certain trainees would be allowed to bill for selected specific services, performed without direct supervision, once the trainees have been evaluated and credentialed to perform a service.

Finally, some medical schools are engaged in ongoing efforts to identify candidates whose ultimate goal is to practice in rural or other underserved areas. These individuals would then be candidates for participation in programs of accelerated undergraduate medical education followed by guaranteed graduate medical education training in areas of identified regional need. These programs could hold promise by both potentially providing savings and helping to address workforce shortages and maldistribution of providers.

The ACS believes the aforementioned, temporary GME modernization and quality improvement fund could be vitally important in supporting pilot studies at selected sites to determine the efficacy of all of the previously mentioned types of initiatives, as well as others yet to be identified. Most importantly, because numerous current analyses project shortages in the number of



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physicians and because of the long lead times needed to train them (currently five years, in the case of general surgeons), we firmly assert that the funds necessary to support these innovative endeavors in GME training should supplement, not supplant, the current funding designated for GME training. The modernization and quality improvement fund should NOT be created in a budget-neutral fashion but should be seen as a short-term, time-limited investment in improving the efficiency of the system and addressing projected shortfalls.

Additional funds are required to address shortcomings of the existing system while creating new and improved mechanisms for the future. Although it is imperative to make deliberative efforts at substantive reforms, it is equally imperative to ensure the overall number of physicians trained actually increases as a result, and that all public funds directed at GME are used to produce the physician workforce required to meet the identified health care needs of our nation's population in the most efficient way possible.

ACCOUNTABILITY

Certifying that funds are directed at producing a quality physician workforce

One of the most pointed criticisms of federal support of GME is the lack of accountability.^{2,24} While accountability for GME spending is thought of primarily in terms of holding training entities financially accountable for the expenditure of billions of taxpayer dollars, there are also those who believe training entities should be held financially accountable for the specialty mix, readiness, and quality of their trainees, and even the geographic distribution of locations where an entity's graduates ultimately practice. In the College's discussion of accountability, we focus primarily on ensuring that scarce public funds are being used to support the training of a health care workforce capable of meeting the country's future needs.

It is our opinion that training entities should be held accountable in a manner proportional to their ability to influence the desired outcome of GME policy goals. While all programs should be good stewards of the federal funds with which they are entrusted, they should be held accountable primarily for their efforts toward ameliorating identified workforce needs and the quality and readiness of the trainees produced as part of those efforts and not held accountable for the ultimate geographic distribution of graduated trainees. We seek to increase this financial accountability and transparency through a governance structure designed to allow national standards to be achieved through regional

control. Regional boards would be tasked with achieving broad goals, but would have flexibility in choosing which levers to use to meet those goals. Holding training programs financially accountable in this way is different but complementary to the work of the ACGME, which requires programs to meet additional stringent requirements for participation.

Although our principles clearly indicate our profound belief that GME should continue to be supported as a public good, the ACS acknowledges the significant concerns relative to inadequate accountability for a substantial proportion of the public funds directed at GME and again acknowledges the relative ease in accounting for DGME dollars versus accounting for IME payments. Unfortunately, the complexity and inherent opacity of the current system creates the perception that funds are being used to support activities unrelated to training a high-quality workforce. The ACS believes that the vast majority of GME funds are used for their intended purpose; there is, nevertheless, the need for enhanced transparency in order to accurately demonstrate that the funds expended are indeed used to support training. Additionally, we believe that the entities engaged in GME training should be held accountable for their efforts directed at producing both the proper number and specialty mix of graduates to meet the identified health care needs of the nation's population.



Entities engaged in GME training must further be held financially accountable for the quality and readiness of their graduates; that is, held accountable for producing competent physicians who are capable of contributing to the fulfillment of workforce needs as identified from objective data. The standards established by the American Board of Medical Specialties are a logical source of such measures and provide one of several metrics that should be a component of assessing the readiness of a program's graduates. Incentives to attain the correct mix should be primarily positive, with any negative incentives, in the form of shifting federal support to other programs, reserved for programs that, in addition to producing the "wrong" mix, are not meeting established standards of readiness and quality. The central governing board, using data collected for workforce projections, should develop standards for training programs with reasonable, regional flexibility to account for differing needs and practice patterns in order to ensure that unique workforce needs are met in each individual region.

Producing the correct specialty mix of physicians is only one component of the struggle to ensure nationwide patient access to the appropriate type of care in a timely fashion.²⁴ This will also require the appropriate distribution of physicians to meet the identified workforce needs. While the current system struggles to attain efficient geographic distribution, training location correlates highly with where physicians ultimately practice. Data consistently demonstrate a retention rate of 45 percent for residents within the state in which they train. A retention rate of 68 percent was reported for those completing both their undergraduate and graduate medical education within a state.²⁶

While we believe significant efforts directed toward increasing these retention rates are required as part of a larger effort to address the problem of maldistribution, we feel it would be inappropriate to hold training entities responsible for the geographic distribution of their graduated trainees. Rather, the governance authority should be empowered to design incentives, both during and after residency, to assist in both keeping graduates

in critical specialties in regions where they are needed and attracting other practitioners from other regions to shortage areas. These incentives should serve as the primary means of encouraging graduating trainees and established physicians to locate or relocate to practice in areas of need as identified by workforce data. Examples of such incentives are the variously structured loan forgiveness programs employed by individual states and the National Health Service Corps.

The ACS has long supported legislation seeking to increase the number of GME positions above the caps placed in 1997. However, we acknowledge that increasing the number of positions alone will not fully solve the issue of having the right type of physician, in the right place, at the right time, to optimally meet the needs of the populace. Similarly, the College believes that proposals aimed at simply discouraging subspecialization are an ineffective component of objective, substantive efforts directed at GME reform.¹⁰ Subspecialists are both necessary and essential for their expertise in producing innovation in clinical treatment, as well as the provision of the type of care our nation's population has come to expect.

As we have stated repeatedly, far too little actionable data exist about the overall workforce needs present in our nation. Accordingly, the ACS believes that the first step in the reform process designed to appropriately hold the entities engaged in GME accountable is the derivation of reliable workforce data. The availability of such data is absolutely critical before meaningful efforts directed at producing the correct specialty mix of physicians can be initiated.

Additionally, and in accordance with the recommendation of others, we believe that a single, combined stream of funds should flow directly to a GME governance authority.²⁴ That GME authority should have the mandate to disburse funds to the institutions and training entities sponsoring GME training. Workforce needs identified in longitudinal, periodic survey data would receive priority funding, and a specified majority percentage of funds would be directed at fulfilling the

26 Association of America—Medical Colleges. *2015 State Physician Workforce Data Book*. November 2015. Available at: [http://members.aamc.org/eweb/upload/2015StateDataBook%20\(revised\).pdf](http://members.aamc.org/eweb/upload/2015StateDataBook%20(revised).pdf).



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identified shortages. Entities which met their goals by producing a quality product, capable and ready to meet the needs of the population served, should be rewarded through the provision of increased funding or additional flexibility in the specialty areas in which the funding is required to be directed. Such a system would allow for some individual, institutional discretion in which GME programs were supported and maintained. Consistent with the example from the UMEC experience, institutions would be permitted to use their own revenue to expand or start residencies that were not prioritized.³

As mentioned in the beginning of this section, in addition to the lack actionable workforce data, there is a dearth of information on how current federal support for GME is spent, leading to calls for greater transparency. The creation of objective cost reporting requirements, with clear delineations established as to what can be supported with a single stream of federal funds, would help to ensure that those funds are being used for the intended purpose. The ACS believes that stakeholder input is critical in the establishment of such guidelines and delineations and would encourage Congress to seek public comment from subject matter experts from across the spectrum of involvement of GME training in establishing such. While again acknowledging that some advocate that the tying of funds to the individual trainees would increase both transparency and

accountability, the ACS again reiterates its concerns that such a system might prove to be overly complicated in terms of documenting where funds flow and that unintended consequences may outweigh any purported benefits of such a system.²⁴

In addition to accountability for efforts directed at meeting identified specialty workforce needs, institutions should also be held financially accountable for the quality and readiness of the graduates produced. What those quality metrics are and how they can be derived most efficiently has yet to be determined. The derivation of these metrics is a proposed objective for the previously mentioned modernization fund. Though such metrics should assuredly include well-established benchmarks, such as specialty board certification, the ACS suggests that in addition appropriate quality and readiness metrics for all physicians should include training in evidence-based medicine, shared physician-patient decision making, and provision of care to underserved populations. The ACS also suggests that additional appropriate metrics specific for surgeons could include video review of trainees in the performance specified core procedures, participation in registries and quality improvement programs provided by the appropriate surgical specialty societies, and participation in state-based or federal programs directed at improving value driven outcomes.

GOVERNANCE

Regional governance as the effective, operative arm of a national strategy

The IOM report on GME pointed out the lack of an effective entity charged with the coordination and oversight of the approximately \$15 billion in annual federal taxpayer funds directed toward the education and training of the nation's physician workforce.² To fill this void in oversight authority, the ACS believes that there are potential significant advantages in implementing future reforms through a governance model similar to that of the Federal Reserve System with a centralized Board of Governors and several regional Boards of Directors

providing expert knowledge from the perspective of their individual regions.²⁷ This approach, using both public and private stakeholders, has the potential to be more nimble than vesting all control in a single, central entity since health care is still largely a local experience for patients, and the members of each of the regional Boards of Directors would be more familiar with specific regional population characteristics, physician practice patterns, and unique workforce needs. As an example, the National Disaster Medical System maintains a number of

²⁷ Federal Reserve Bank of St. Louis. *In Plain English: Making Sense of the Federal Reserve*. July 2012. Available at: https://www.stlouisfed.org/~media/Images/Education/In%20Plain%20English/PDFs/In_Plain_English.pdf.



Federal Coordinating Centers in the 10 Federal Emergency Management Agency (FEMA) regions, which function to distribute responsibility for the movement and care of patients and maintain regional planning capabilities.

A regional governance body would have more in-depth knowledge as to the specific resources available through the training programs in their individual region. Such a regionalized governance approach would also arguably be better suited to collect workforce data on the population needs in specific geographic areas and to address the workforce needs identified by prioritizing support of target specialties. Lastly, we also believe that a regionalized GME governance system would greatly enhance transparency and accountability as regional directors would be closer to the programs they oversee and responsible for seeing to the workforce needs of the populations they serve.

As envisioned, each of the geographic regions would consist of a number of contiguous states. While workforce analysis and broad strategic decisions would still be accomplished at the national level through combined participation of both the executive and legislative branches, oversight of the GME programs in each region would be under the direct supervision of an appointed Board of Directors consisting of a membership representing a broad perspective of stakeholder interests to include at a minimum the following: 1) the institutions and entities actually conducting GME training, 2) the medical schools in the region, 3) the health care insurance industry, and 4) the general public, representing the patient perspective. Stakeholder input would also be necessary for defining the regions themselves and assessing issues such as how best to address the unique needs of training programs in rural and other underserved areas and their trainees.

A primary function of the regional GME Board of Directors would be regular collection of accurate survey data on workforce needs, actual training costs, and changes in the medical marketplace within the specified region. All Medicare funds designated for GME would be consolidated into a single funding stream, which would then be allocated to and administered by the regional GME Board based upon an analysis of the collected data and in concert with the national strategy to meet

workforce needs. There would be need for continued close collaboration with state and federal regulatory bodies and other existing entities such as the ACGME.

The regional Board of Directors would be responsible for organizing GME training in their region into training collaboratives including all institutions and training entities in the region engaged in GME. All those institutions and entities participating in such a collaborative would have individual roles to play and would bear some responsibility toward producing the appropriate physician workforce necessary to meet the needs of the region's population as determined by the regional data collection and analysis described above. Regionalization could thus facilitate targeted interventions to address shortages projected in specific geographic areas by implementing a system of GME financing that is flexible, creates the proper incentives and enhances accountability. Because federal resources are limited, ACS believes that it is imperative that continued federal support for GME training be directed toward meeting the disparate workforce needs found in the various geographic regions of the country.

As noted earlier, the UMEC provides template for this type of governance arrangement.⁵ The UMEC is a state agency composed of an eight member board that conducts periodic health workforce surveys and supports regional workforce initiatives. It organized the four teaching institutions in the state into a GME consortium. The UMEC subsequently applied for and received a waiver from the Centers for Medicare & Medicaid Services (CMS) for a demonstration project that incorporated a change in the method whereby GME funds flow to hospitals that sponsor GME training programs.²⁵

The Utah Medicare Graduate Medical Education Demonstration Project tested the feasibility of using public policy to stabilize and rationalize GME funding by linking Medicare GME funding to documented physician workforce needs. During an eight-year period between 2003 and 2010, the CMS waiver allowed the UMEC to manage the allocation and distribution of DGME funds based on evidence obtained through a series of periodic workforce surveys, and the results of the survey were used to develop a list of prioritized physician shortage specialties for the state. While the waiver was in effect,



CMS DGME funds for all of Utah's teaching institutions were pooled and subsequently distributed by the UMEC to the GME programs based on a ranking of their efforts to meet the needs identified on the list of priority specialties.

UMEC contracted with each residency program providing GME based on the amount of training taking place at each institution and the post-graduate year level of training. Additionally, payments per specialty were held at a specific rate per resident regardless of which institution was providing the resident's education. Contracts were reviewed and adjusted annually by the board.

During the period of time the waiver was in effect, nothing prohibited institutions from using their own revenue to expand or initiate training programs not prioritized by the workforce surveys. It is noteworthy that during the period of the UMEC demonstration project, Utah saw net growth of 37 percent in full time equivalent GME positions, to include 45 positions that were outside the CMS waiver. This growth outside the waiver was the result of the teaching hospitals within the consortium restructuring and reallocating their own GME resources based on UMEC's recommendations and was a step toward meeting the workforce needs of the state.³

The waiver project demonstrated the ability to link the survey data on workforce needs to GME training by directing the flow of funds toward the goal of meeting those workforce needs identified in the data. The project also provided a fair and equitable funding mechanism for all participants as taxpayer dollars were directed to the sponsoring institutions based on that institution's efforts in training to meet the need for specific specialties as identified in workforce survey data. The allocation of training resources was made regardless of whether the training occurred in inpatient or outpatient settings.

In a nationwide regionalized system, centralized federal administrative oversight would be provided by an independent regulatory agency, analogous to the Board of Governors of the Federal Reserve. As envisioned, governors would be nominated by the President, confirmed by the Senate and serve fixed staggered terms.²⁶ A primary function of the Board of Governors would be to analyze and verify the workforce data submitted by the regional Boards of Directors—if funded, perhaps with the support of the National Health Care Workforce Commission—and to then allocate federal funds accordingly to the Boards of Directors in the various regions.

The administrative burden of such a body would be lessened, and therefore the efficiency of the centralized government oversight facilitated, if it was charged with the oversight of a limited number of regions rather than 50 individual, state-based entities. Other potential advantages to a geographically contiguous, regionalized GME governance structure include the ability to maximize access to resources in tertiary and quaternary care, as well as graduate and undergraduate medical education. The most appropriate utilization of regional centers of excellence, specializing in higher levels of care for specific conditions, could also be maximally leveraged. Lastly, and perhaps most importantly, regionalization provides the optimal structural template whereby the different workforce needs of disparate regions can be addressed in pursuit of the goal of producing a demand-side workforce meeting the health care needs of each region.



CONCLUSION

Since 1965, the partnership between GME programs and the federal government has proven invaluable as a means of producing a skilled physician workforce that serves the public good. However, like any government program, federal support for GME should be reviewed and assessed periodically to ensure that it is keeping up with changing needs, requirements, and technology and achieving its intended mission in the most efficient and effective manner possible.

Factors such as projected shortages of physicians, limitations on Medicare funding to support additional training positions, changing technology, and regulation on the process of GME training itself have combined with renewed interest in Congress to improve the efficiency, transparency, and accountability of the current system to indicate that the time may be ripe to re-envision the GME system. With this renewed interest in the matter in mind, the ACS has undertaken the task of drafting our principles of GME reform that serve as the basis for this document, as well as the recommendations and proposed steps that flow from them. It is our hope that the ideas in this document will help to inform the discussion over GME reform and ultimately will contribute to the development of a more transparent, innovative, and efficient system. The ACS believes that a system driven by robust data and designed to address the unique training needs of surgeons, as well as those of all other physician specialists, will be best able to ultimately serve the disparate health care workforce needs of our nation's citizens in all regions of the country.



APPENDIX

SUPPLY AND DEMAND FOR GENERAL SURGEONS: PROJECTIONS FROM 2014 TO 2030

PREPARED FOR THE AMERICAN COLLEGE OF SURGEONS

Thomas C. Ricketts, PhD, MPH, Cecil G. Sheps Center for Health Services Research,
The University of North Carolina at Chapel Hill

June 27, 2016



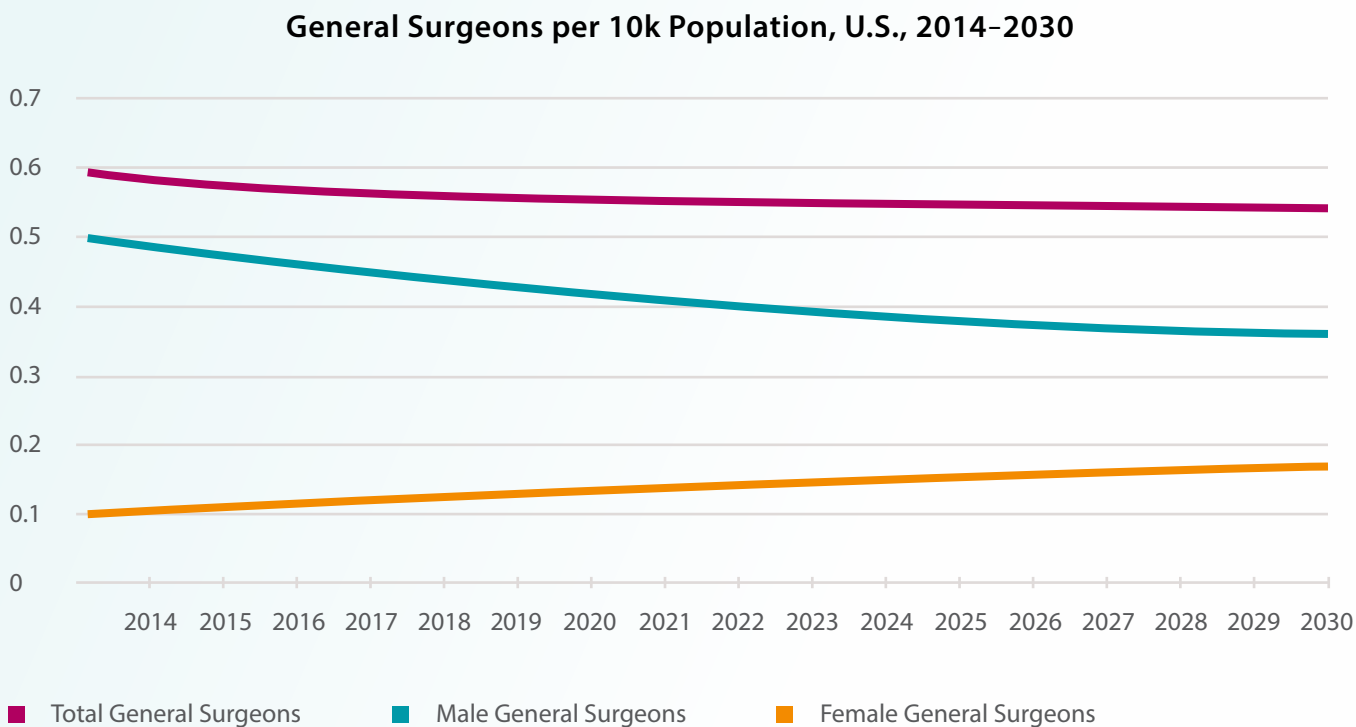
EXECUTIVE SUMMARY

The growing consensus is that the future supply of general surgeons will not meet the needs of the American population.

This outlook is supported by our analysis of trends in the entry and exit of general surgeons from practice. Under current patterns of entry into practice and a continued population growth trend, the projected supply of general surgeons will decline against population (Figure 1). This projection of a decline in access to general surgery agrees in the main with a recent projection of future physician supply reported by the Association of American Medical Colleges

(AAMC) and conducted by IHS, Incorporated. That study concluded: “Under virtually all scenarios, the supply of surgical specialists is projected to decline by 2025” (Dall, West et al. 2016). Older published projections also indicate that the supply of surgeons will decline by 2028 (Fraher, Knapton et al. 2013). This report describes the approach to developing the projection of general surgeon supply in the U.S. through 2030.

Figure 1. Projection of General Surgeon Supply and U.S. Population, 2014–2030





INTRODUCTION

This analysis describes a projection of general surgeon supply in the U.S. through 2030 and discusses that projection in the context of other supply and demand projections, including a recent estimate for all physicians and for all surgical specialties made by the AAMC (Dall, West et al. 2015, Dall, West et al. 2016). The projections described here draw on the data and methods used in the “FutureDocs” physician supply and need models developed at the Cecil G. Sheps Center for Health Services Research at University of North Carolina-Chapel Hill¹ and builds on earlier work reported in the *Annals of Surgery* (Fraher, Knapton et al. 2013). That project is sponsored by the Physicians Foundation, and additional work on surgeon supply has been supported by the American College of Surgeons (ACS) and the American Pediatric Surgical Association (APSA).

The projection described here shares many components with the AAMC and the FutureDocs projections—they both use the AMA Physician Masterfile as the basis for their supply estimates; they both use multiple and similar datasets from the AAMC and ACGME to model input into the supply, and both use retirement estimates based on national vital records and state-specific physician license data. However, the projections come out with very different results, and those results are quite striking for surgery.

The AAMC report summarizes their results for surgery thusly:

"Under virtually all scenarios, the supply of surgical specialists is projected to decline by 2025; in contrast, the supply of primary care physicians, medical specialists, and other specialists is projected to grow over this period in nearly all supply scenarios. Based on current trends, the supply of several larger surgical specialties (e.g., ophthalmology and urology) will fall, as future attrition is likely to exceed the number of new entrants. In other words, there will be fewer surgical specialists in 2025 than are practicing today (Exhibit ES-3). Yet there continues to be strong projected growth

in demand, leading to a projected shortfall of 25,200 to 33,200 surgeons by 2025. These surgical workforce projections are in the aggregate, and projections for individual surgical specialties may vary significantly." (p. v. "Complexities, 2016")

The starting points for total **surgical specialty** supply in 2014, meaning multiple specialties in surgery, including general surgeons and subspecialists and including obstetrician gynecologists, are relatively close for both models, 154,784 for the FutureDocs model and 156,300 for the AAMC (page 38, AAMC 2016 Report). However, the FutureDocs model projects a 2025 supply of 167,534, a net growth of 12,750 surgeons, while the 2016 revision of the AAMC model, under a “*status quo*” assumption, estimates an overall loss of 2,600 to a total of 151,000 by 2025, and the earlier work by Fraher et al. anticipated a more severe drop to 130,000. The AAMC also ran a projection with a modified assumption that surgeons would retire on average two years later. That projection anticipated a small gain of 500 surgeons by 2025. These variations suggest not just uncertainty in the future of surgery, but the effect of differing assumptions for entry and exit from practice. The wide difference between these alternative projections for all surgeons, resulting in, on the one hand, a growth estimate of nearly 14,000 surgeons and on the other hand a prediction of losses of up to 2,600, illustrates how slightly different assumptions can produce wide variations in the outcome when trying to predict future supply of surgeons.

The numbers reported by the AAMC, Fraher et al., and the FutureDocs project represent a combination of surgical specialties, not solely general surgery. The analysis reported below focuses only on general surgery, thus the numbers are not directly comparable with the referenced work. This report will discuss options for alternative assumptions for projections of the supply of general surgery.



A FOCUS ON GENERAL SURGERY

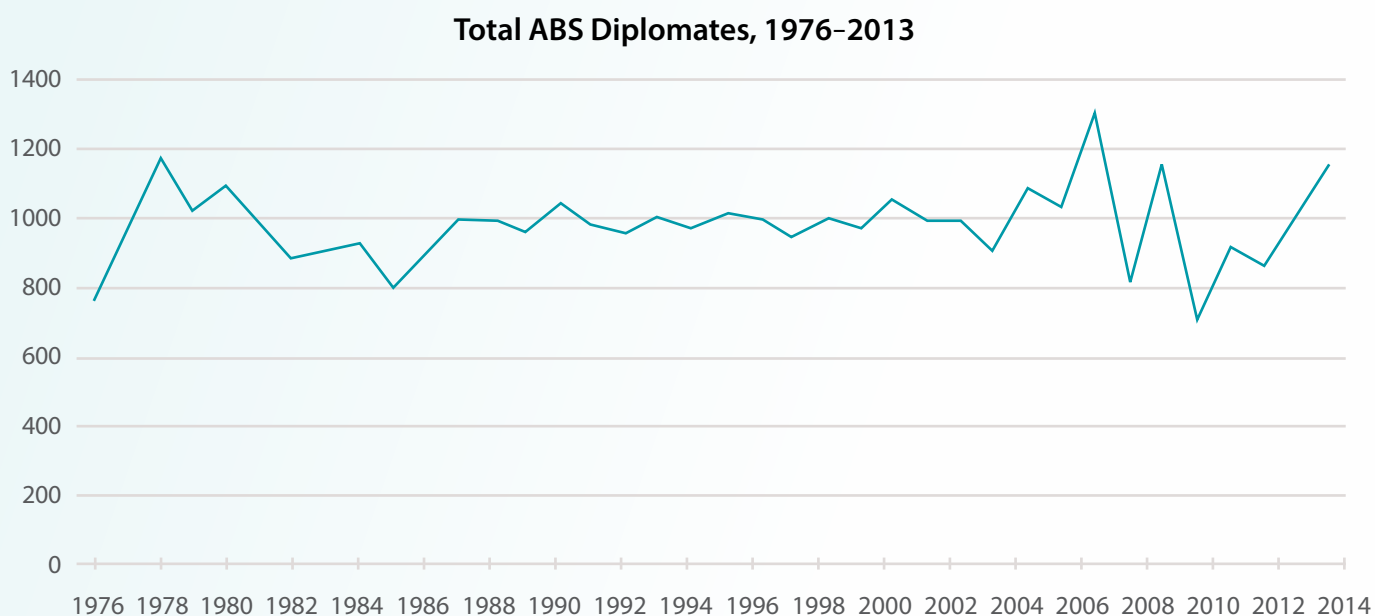
For the analysis of general surgeons we use a definition based on the “self-designated specialty” used in the AMA Masterfile and whether a surgeon has active ABS certification. Included are physicians who indicate that their “first” or “second” specialty is “General Surgery” and have an active American Board of Surgery (ABS) certification and meet the following inclusion criteria:

“The model includes all surgeons listed as actively working according to the AMA Masterfile, whether it is work in direct patient care, administration, medical research, or teaching. Surgeons classified (self-report or indicated in the Masterfile) as retired, semi-retired or not active were excluded. We assume small proportion of surgeons retire beginning as early as age 50 and accelerating slowly until age 65 and then accelerating rapidly until a cutoff of all surgeons of 80 years of age. The modeled retirement pattern is illustrated in Figure 5, below. Physicians whose major professional activity was “unclassified” in the Masterfile were included in the model. Physicians in training—specifically residents and fellows—were excluded from the baseline workforce

data, but are included in the model as part of the **graduate medical education (GME) pipeline**. Federal physicians were included since they often provide health care services to civilians during and after retiring from federal service.”

The UNC and AAMC models base their entry rates by specialty on AAMC “GME Track” data (aamc.org/services/gmetrack/). These data follow all postgraduate trainees—except those in non-certified fellowships or specialty training. One characteristic of the UNC model that is not shared in the AAMC work is the allowance for switching between specialties, branching into another specialty in residency training, and entry into new specialties over time. The entrance rate for surgeons in the AAMC model is not specified. The general surgery entry rate used here is based on the number of initial and renewed board certifications reported by the ABS. One striking characteristic of the production of general surgeons is the long-term stability of the numbers who are granted a diploma in the specialty. Figure 1, page 24, illustrates this trend.

Figure 2. American Board of Surgery Diplomates, 1976–2013





A FOCUS ON GENERAL SURGERY *(continued)*

Not all general surgery diplomates go on to practice general surgery, rather some enter into fellowships including hand, plastic, critical care, head and neck, pediatrics, and other subspecialties that require the general surgery board as a preliminary qualification. Thus, the input into the supply of general surgeons is less than the total of the new diplomates completing their certification.

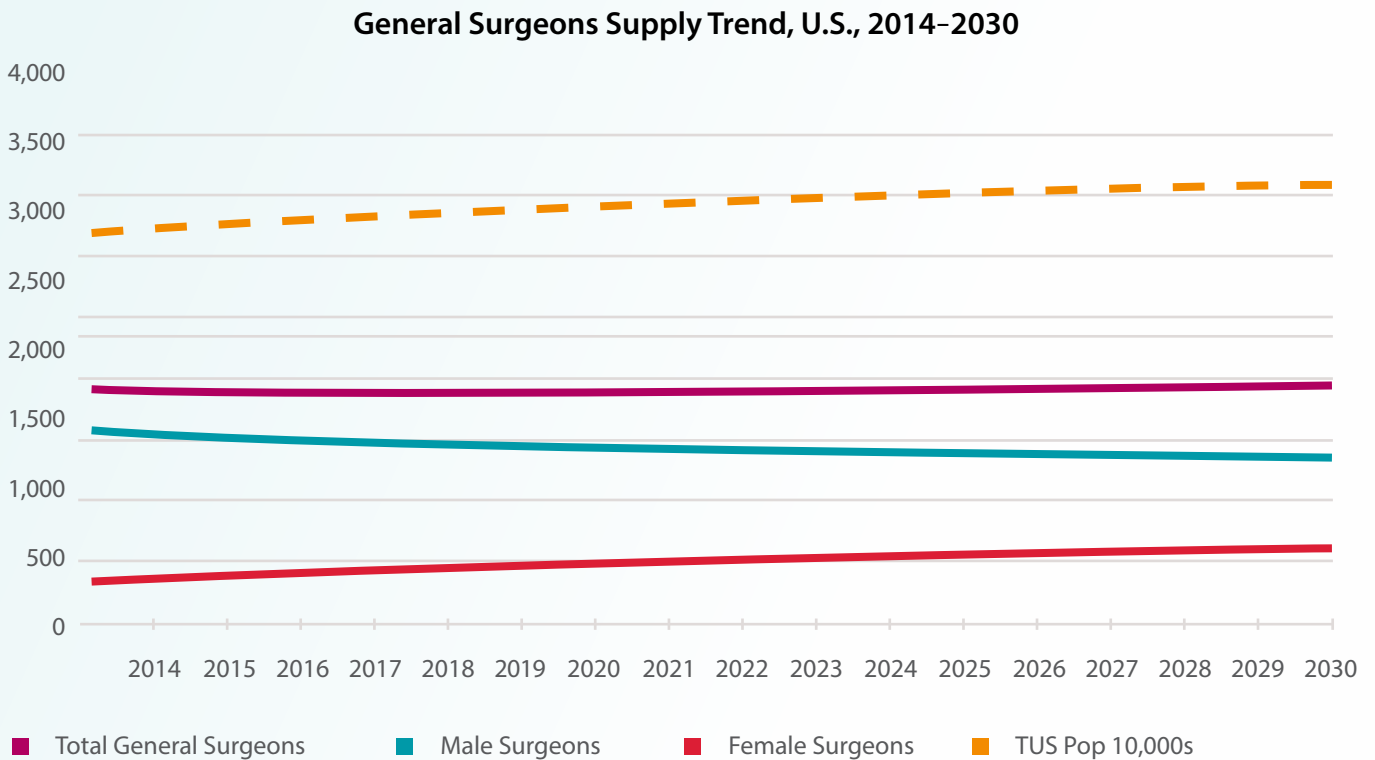
The projection model using the inputs of ABS diplomats (initial and recertification) as well as a mid-range retirement scenario (see section on retirements below for specifics) results in the following predicted trend for the supply of general surgeons in the U.S. through 2030.

Table 1. Projected Supply of General Surgeons, 2015–2030

	2015	2020	2025	2030
General Surgeons Male	15,286	14,185	13,697	13,542
General Surgeons Female	3,435	4,385	5,188	5,858
General Surgeons Total	18,721	18,570	18,885	19,400
U.S. Pop 10,000s	32,137	33,450	34,734	35,940

The projection in Table 1 is illustrated in Figures 3 and 4, for each year between 2014 and 2030.

Figure 3. General Surgeons, Supply Trends, U.S. 2014–2030





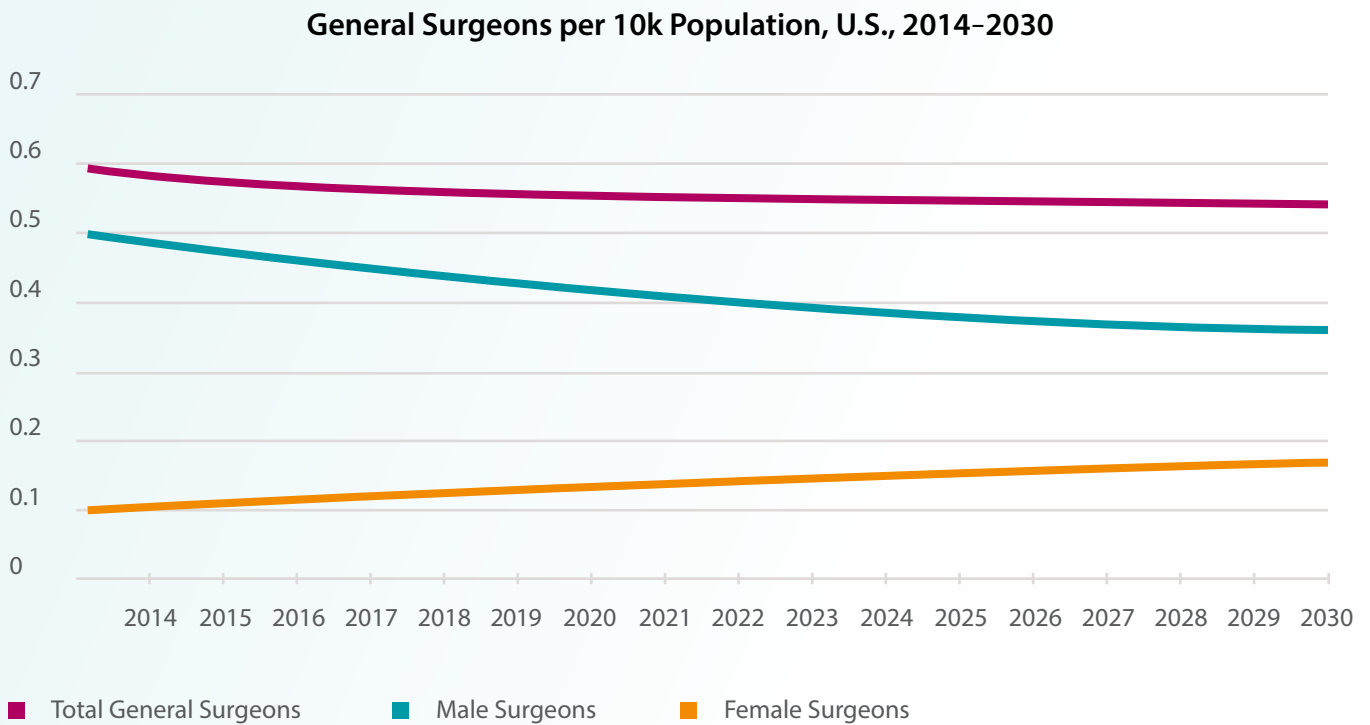
The anticipated trend sees a growth of the number of general surgeons of 3.6% but a concomitant growth in the overall U.S. population of 11.8%. The question then arises: will this create a shortage of general surgeons even in the face of changes in other specialties—surgical and nonsurgical—along with innovations in practice and technology as well as payment systems. Will the likely trend in the supply of general surgeons create a crisis for access to surgical care in the U.S.?

The UNC long-term projection of the numbers of general surgeons indicates a slight growth in the “head count” number of general surgeons by 2030; however, that

increase must be considered in the light of population change. The population-adjusted trend can be depicted using the ratio of general surgeons per 10,000 population to adjust for population growth. That trend suggests an overall decline in access to general surgeons by 2030 (Figure 4).

The figures and tables do not adjust for “full-time equivalents” nor do they make any adjustment for the use of non-MD professionals in the care of patients. No consideration of change in demand are described in this projection, but factors that may influence need and demand are discussed below.

Figure 4. Ratio of General Surgeons to 10,000 U.S. Population, 2014–2030





COMPARING THE MODELS

The principle difference between the AAMC and UNC models is that the AAMC compares future, projected supply of physicians with future, projected need for care from physicians. This report critiques the elements used to construct both models and how these elements may affect the results and describes why a demand element is difficult to project. This report discusses the way in which entry into general surgery, retirement and exit, need for surgery, and productivity all can affect the results of an analysis of the future balance of supply and demand.

Retirement and Exit from Practice

Few studies verify the actual retirement patterns of physicians (Williams, Konrad et al. 2001). Multiple studies discuss the “intention” to retire, for example (Farley, Kramer et al. 2008; Walker Keegan 2008; Scarrow, Linskey et al. 2009; Moriarity, Brown et al. 2014; Racette, Holtzman et al. 2014; Rayburn, Strunk et al. 2015), but they do not offer data to verify their assumptions. The continued clinical activity of surgeons as they age has also been a topic of controversy (Schenarts and Cemaj 2016), but surgeons clearly do continue to operate and practice as they move into their 60s and 70s, although their productivity and the focus of their work may change. However, we have a limited set of studies to guide us in assigning an activity level at various age levels and it is difficult to make generalized assumptions about activity levels. One recent analysis of burnout among physicians at the Mayo Clinic found that surgeons were far less likely to cut back their hours or work less than full time than other specialties, 5.1% versus 15% from 2008 to 2014 with no trend either up or down for surgeons (Shanafelt, Mungo et al. 2016).

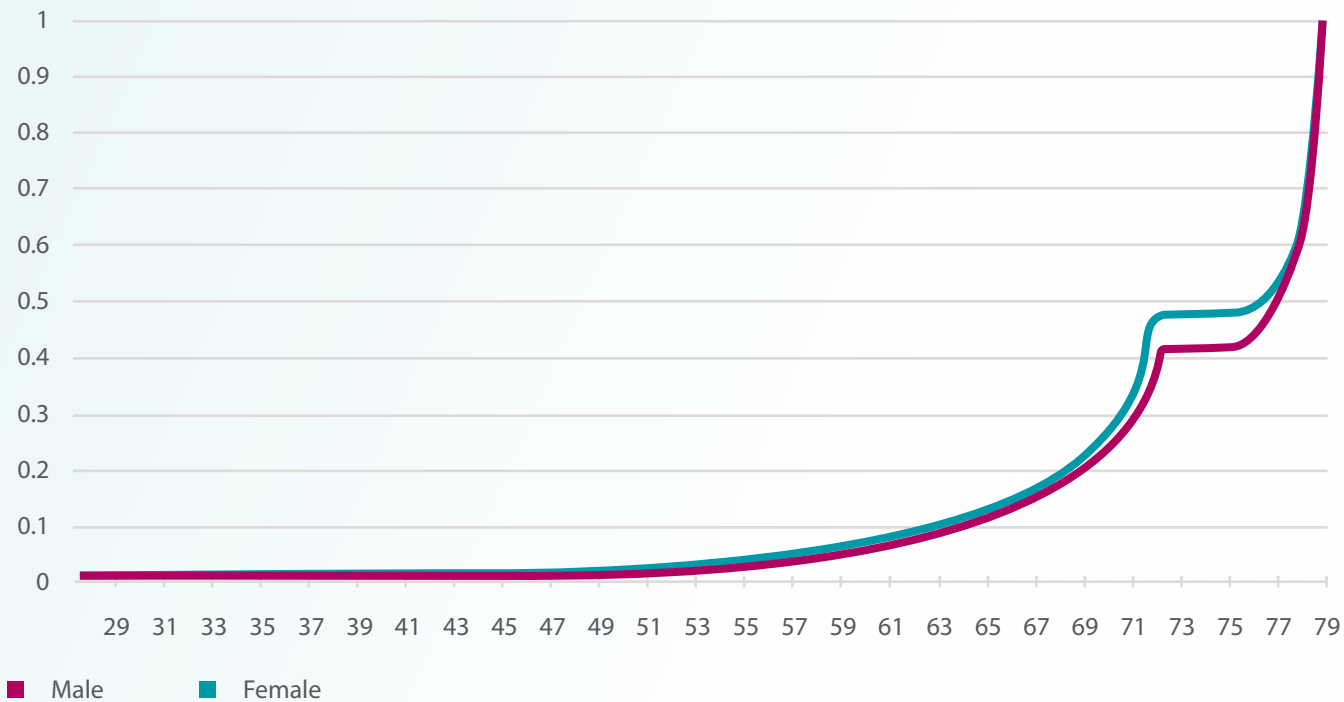
The retirement scenarios used by the AAMC are reasonable in themselves, but the effects of their two-year early retirement scenario (a decrease in supply of 35,100) are too great to be believable and the effect of the retirement estimates in any scenario is a likely

important contributor to the overall difference in results between the models. The UNC model uses a combination of observed exit from practice among North Carolina physicians including surgeons, exit from practice in the AMA data, and national mortality data to calculate age-gender-specialty-specific exit rates. The AAMC uses similar data from a two-year series in Florida but “smooths” the exit data (see Exhibit 19 in the report). The North Carolina data cover a 25-year time period. While the AAMC report describes differences by gender and specialty in exit rates, it displays a combined rate in its chart in the report. The UNC model also estimates exits by age, gender, and specialty. However, there is one key difference between the two models, the AAMC truncates its supply at age 75 while the UNC model has a cut off of 79 (<80); however, the numbers in that group are very small, and the exit probabilities are very high over the age of 75 for every year. The assumed exit rate at each age for male and female general surgeons used in this projection is depicted in Figure 5. The numbers on the vertical axis represent the cumulative percentage of general surgeons leaving practice. We are unable at this time to generate an exit from operative practice probability but a study of this is underway using individual surgeons’ data over a 20-year period.



Figure 5. Retirement and Exit Assumptions

General Surgeons Supply Trend, U.S., 2014-2030



Baseline Assumptions

The overall total number of physicians that serves as the baseline for estimates of supply varies. The AAMC 2016 Update Report starts with a total of 782,200 physicians in 2014. This compares with the Federation of State Medical Board’s census of 916,264 active licensed physicians in the U.S. in 2014 (Young, Chaudhry et al. 2015). The AAMC estimates begin with a 2014 baseline for all surgical specialties of 156,343 FTEs (Exhibit A-7 2016 IHS Documentation; and Exhibit 24 of the 2016). The AAMC baseline number for surgeons rises between 2013 and 2014, from 155,300 in 2013 to the 156,343, a trend that suggests current growth in supply (source: Exhibits 2 and 4, IHS-AAMC 2015 Report). The AAMC

categorization of surgical specialties includes general, neurological, obstetrics and gynecology, orthopaedic, otolaryngology, plastic, urology, and vascular surgery in some tables and adds thoracic in others (Exhibit 8, 2016 Report Documentation). The FutureDocs online category of surgery includes general surgery, critical care, vascular, hand, and other subspecialties requiring a general surgery initial certification but excludes obstetrics/gynecology, neurosurgery, ophthalmology, orthopaedic surgery, pediatric surgery, plastic surgery, thoracic surgery, and urology, which have their own categories for projections. The projections reported here are for general surgery alone.



COMPARING THE MODELS *(continued)*

Full-Time Equivalent (FTE) Assumptions and Supply

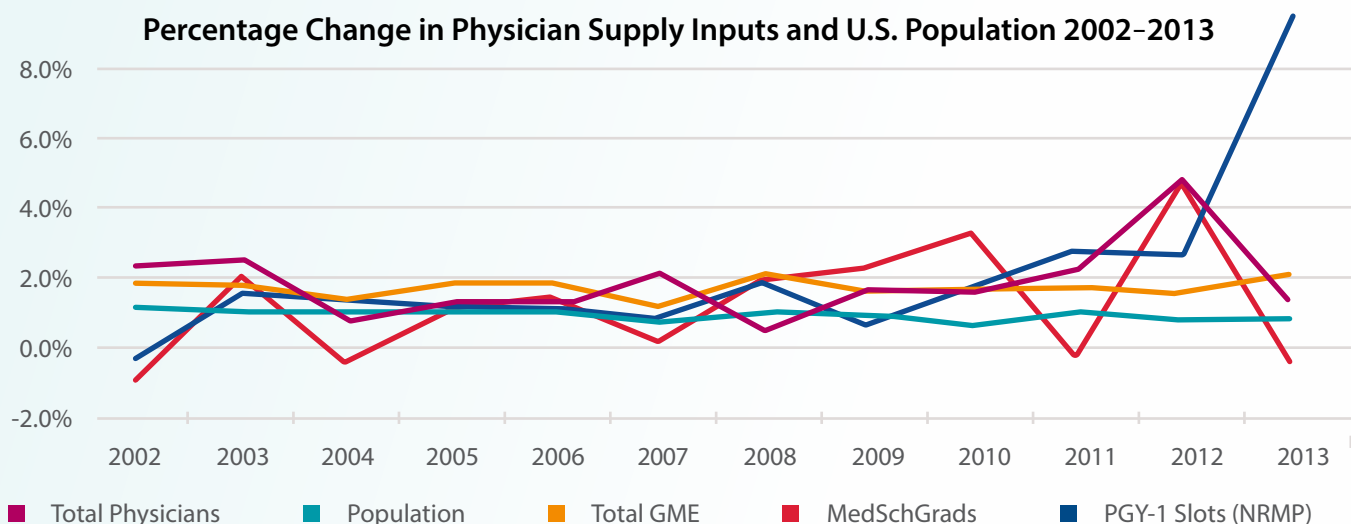
The AAMC FTE calculation is described thusly: “one FTE is defined as the current national average number of direct patient care hours worked per week for providers in each profession or medical specialty” (2015 AAMC Report, page 52). The assignment of one FTE varied by specialty, and the AAMC report used a survey of Florida physicians reporting patient hours worked in 2012–2013 to create an age-gender-specialty estimate of hours. In the AAMC projection general surgeons were modeled to work 50 hours per week. However, the model parameters for general surgeons were not significant ($p=.775$), indicating very large variation (2015 Report, page 53). The 50 hours as the “average” work week agrees very closely with data collected in North Carolina, and in this component of the models there is general agreement as to the baseline activity level. In 2015 North Carolina general surgeons reported an average of 50.24 hours in practice activity (NC Medical Board Licensure Data, unpublished, 2015). The average number of *direct patient* care hours reported in 2004 was 44.9 hours per week for North Carolina general surgeons, 45.2 hours reported versus in 2015. This is an important factor to consider as the FTE projection by the AAMC anticipates a drop in total hours per FTE based on Census Bureau and the Florida data. Here is where the two models diverge, as there is

no built-in estimate of change in activity level over time in the FutureDocs model. The general surgery model reported here does not adjust for FTE at this time.

The FutureDocs estimate of supply and FTEs is described in detail at <https://www2.shepscenter.unc.edu/workforce/about.php>. The AAMC projection results do not report on numbers or demand for surgeons by subspecialty or for general surgeons.

The graph on page 14 of the AAMC report indicates that their projection will result in a decline in total head count supply of all physicians of 33,300 (791,900 versus 825,200) in 2025, the equivalent of an annual growth rate of minus 0.0011 or one-tenth of one percent. This does not reflect the recent trend in annual growth in overall physician supply of 2.4% over the last decade. A simplified estimate of supply based on a conservative growth rate of 2% per year and using the AAMC baseline 2014 number of 782,200 results in a total of 972,567 physicians in 2025. That rate may not apply to surgeons, however, as much of the growth in new training programs has been in primary care. The chart below tracks recent annual growth rates in the inputs to physician supply, population and total physician supply using a mid-range estimate the specific elements (based on AAMC, AMA, ACGME, and NRMP data).

Figure 6. Changes in Supply Inputs, U.S. 2002–2013





DEMAND SCENARIOS AND SUPPLY OF SURGEONS

Demand in the AAMC and the FutureDocs models is **based on visits to physicians, emergency room use and inpatient stays** drawn from national surveys.

For surgeons it may be more applicable to use anticipated numbers of procedures rather than the more indirect measures of need for surgery based on visit rates.

This approach has not been tried in multispecialty physician workforce projections, but trend data on the number of operations per year are available.

The AAMC demand calculations are complex and described in their 2015 report. The AAMC calculation and the UNC model depend primarily on MEPS (Medical Expenditure Panel Survey) data to estimate office visits and then a secondary estimate of hospitalization rates using National Inpatient Sample (NIS) data. Both models essentially assign use rates to age-gender-race-insurance type categories. The AAMC model includes population indices of body weight and household income strata as well as demand. The exact method of attribution cannot be determined from the report. The UNC model uses a similar regression approach to estimate outpatient, inpatient, and emergency room use rates and reports each for each TSA and 19 clinical service areas for each year of the

projection series and compares that with estimated physician productivity by specialty group. The two models anticipate changes in utilization (demand) very differently. A close comparison of methods is needed. In the FutureDocs model the comparison of supply with need is made in categories of disease, the so-called "Clinical Service Areas" (CSAs). The FutureDocs model determines the balance of the visits provided by a range of specialists who treat patients in the various CSAs. This process of allocation of specialties of disease categories is termed "plasticity" (Holmes, Morrison et al. 2013). For example, the allocation of MEPS categories of visits to general surgery excerpted from the overall model "plasticity matrix" is as follows.



DEMAND SCENARIOS AND SUPPLY OF SURGEONS *(continued)*

CSA	Surgery
Infections	1%
Cancer	24%
Endocrine/ Immune	4%
Blood	0%
Mental	2%
Nervous	6%
Circulatory	24%
Respiratory	4%
Digestive	69%
Genitourinary	17%
Pregnancy/ Childbirth	0%
Skin	6%
Musculoskeletal	9%
Congenital Anomalies	0%
Perinatal	0%
Injury	12%
Signs Symptoms	1%
Residual	1%
Prevention	19%

This indicates, for example, that 24% of cancer visits and 69% of visits for digestive disease are seen by a surgeon.

In the estimates of demand by the AAMC there are assumptions about increases in visit rates based on past patterns and the assumption that sharp changes will occur—especially in inpatient visit rates (see Appendix B). Overall the AAMC anticipates much

greater utilization of physician services than past patterns have suggested. The population will, indeed, age and is likely to require more care, but changes in actual demand in recent years have not shown increases as analysts have predicted. Nevertheless, the AAMC offers this statement about surgery:

“Demand for surgical specialties would rise by 3,900 physicians (with growth in obstetrician and gynecology care, general surgery, and ophthalmology accounting for most of the increase).”

In contrast, the FutureDocs model foresees growth in supply for obstetrics-gynecology and the broad category of “surgery.” However, the UNC model anticipates a drop in the supply of ophthalmologists, a trend that is recognized by the American Academy of Ophthalmology. The supply-demand calculation for ophthalmology is complicated by overlaps with estimates of supply and demand for optometrists and potential changes in scope of practice. The FutureDocs model also anticipates declines in the supply of urologists and otolaryngologists but does not make a specific estimate of how these declines will line up with demand or need—whether a shortage will occur.



PROCEDURE VOLUME AS PREDICTOR OF NEED

Using trends in the numbers of procedures performed and projections of those trends would be a more direct method of anticipating the balance of the supply and need for surgeons. Data from the American Hospital Association indicates that total surgical operations in inpatient hospitals have declined from 27,513,615 in 2005 to 27,211,903 in 2012 (Area Health Resources File 2014). Outpatient surgical volume has likely increased; precise trend data in outpatient surgery are not available but the trend of rapid increase in use of ambulatory surgery centers has slowed for Medicare patients to about 1.4% per year (Medicare Payment Advisory Commission 2014). An analysis of outpatient procedure volume for general surgeons is possible given available data and that study will be undertaken in the coming months.

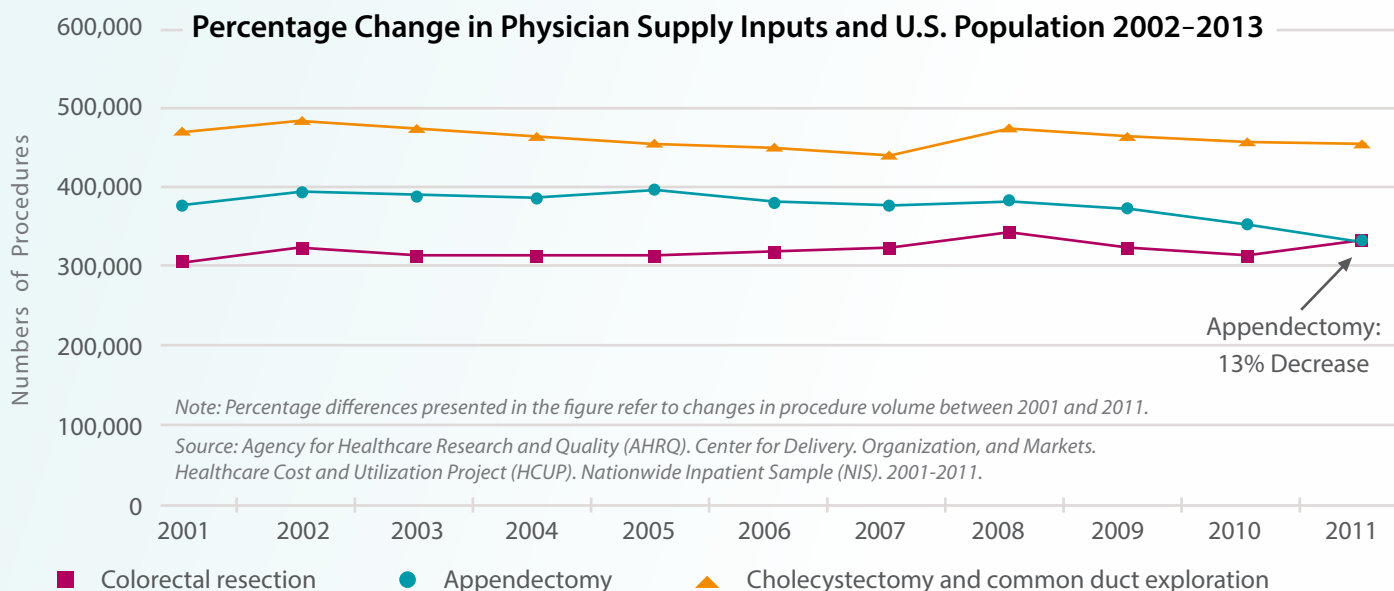
According to Valentine et al (Valentine, Jones et al. 2011) general surgeons with a single surgery board certification performed an average of 533 procedures per year, compared to 401 for general surgeons with an additional board. This estimate agrees broadly with King's slightly higher number of 554 (King, Fraher et al. 2009). If the total estimated number of general surgeons in 2030 were to meet this average production, that would total 10,340,000 operations, fully one third of the overall total of all forms of surgical procedures performed in 2012—

including orthopaedics, plastic, and ophthalmology among others. This seems an unlikely over-projection of the total productivity of general surgeons.

Some data suggest that changes in practice patterns, particularly in the inpatient setting, may partially offset shortages caused by the decline in surgeon to population ratio. Using National Inpatient Survey data we find that operative volume (number) of very common digestive tract procedures, appendectomies and cholecystectomy and common duct exploration is dropping while the total number of colon resections is remaining steady. These trends point to a steady or declining rate of “bread and butter” operations for general surgeons. This may be balanced by an expansion of newer procedures (bariatrics) or by a shift of open procedures in hospital to laparoscopic procedures in outpatient centers.

The AAMC has also projected changes in hospital utilization trends. These largely are linear extensions of current trends. However, for inpatient hospital days, the AAMC projection sharply changes past trends from a decline to an increase (see Appendix B) based on “large growth in the size of the elderly population with their high use of hospital care” (IHS. Health Workforce Documentation. Version 4.4.2016).

Figure 7. Digestive-Related Operating Room Procedures (from AHRQ HCUP)





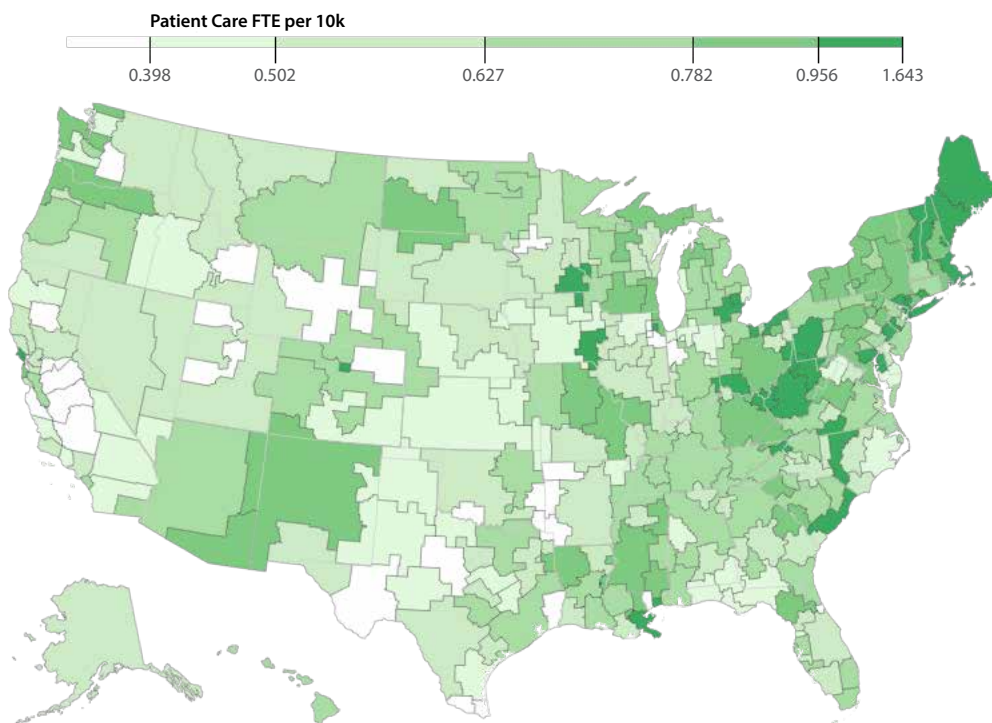
GEOGRAPHIC CONSIDERATIONS

The AAMC model does not break down its projections below the national level. The FutureDocs model estimates supply and need for care at the state and “tertiary service area” level. This allows that model to estimate where there are likely to be surpluses or shortages to care for selected clinical conditions and where the growth or decline in supply of specialties is likely to occur. For example, the map in Figure 8 indicates the relative supply of general surgeons in 2030 expressed as FTE per 10k in tertiary service areas in 2030.

Geographic considerations are especially important for general surgery as a general surgeon's practice location may dramatically affect his or her content of practice.

For example, Decker, et al (Decker, Dodgion et al. 2014) found a high negative correlation between the volume of endoscopies provided by general surgeons and the density of gastroenterologists in the health service area in which they practice. King et al. found that the breadth of practice of general surgeons was smaller for those practicing in rural area of North Carolina than urban places (King, Fraher et al. 2009). Many factors may affect the practice and productivity of a general surgeon, and applying a generalized formula to determine FTE based on productivity is hazardous without adjustment for the location where a surgeon practices as well as the age of the surgeon.

Figure 8. Patient Care FTE General Surgeons per 10k Population, 2030



The following map indicates the areas where there is likely to be an imbalance between the supply of physicians to care for injuries and the burden of injury care (measured in inpatient visits) a clinical condition likely to require surgical intervention. This map is based on a larger definition of surgery and is not restricted to general surgeons.



Figure 9. Relative Shortage or Surplus of Surgery (Excluding Subspecialists) to Provide Inpatient Care for Injury, Tertiary Service Areas, 2030

The FutureDocs Model also allows for the projection of small area data to estimate likely areas where physician supply will grow relative to population. The following figure identifies areas where there will be a likely loss of general surgeons per 10,000 population between 2015 and 2030. The changes in supply in the figure above are based primarily on past patterns of expansion or contraction of the supply of surgeons in each of the TSAs and patterns of population growth or decline adjusted to distribute the anticipated overall change in the broader surgery category. The projected trend in injury incidence is based on age, gender, and race variables and their correlation with injury rates in the TSAs in multiple years of MEPS files.

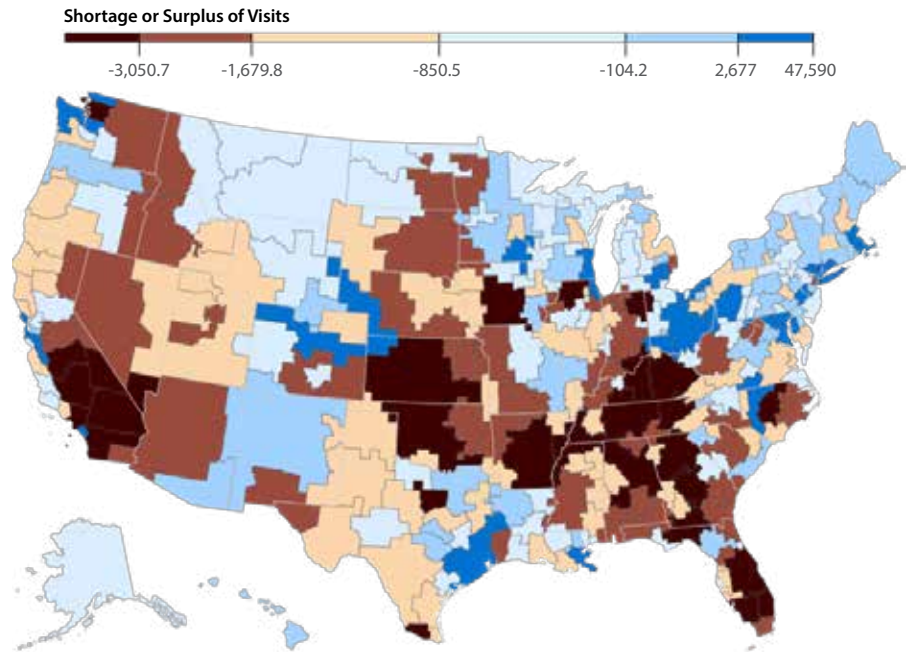
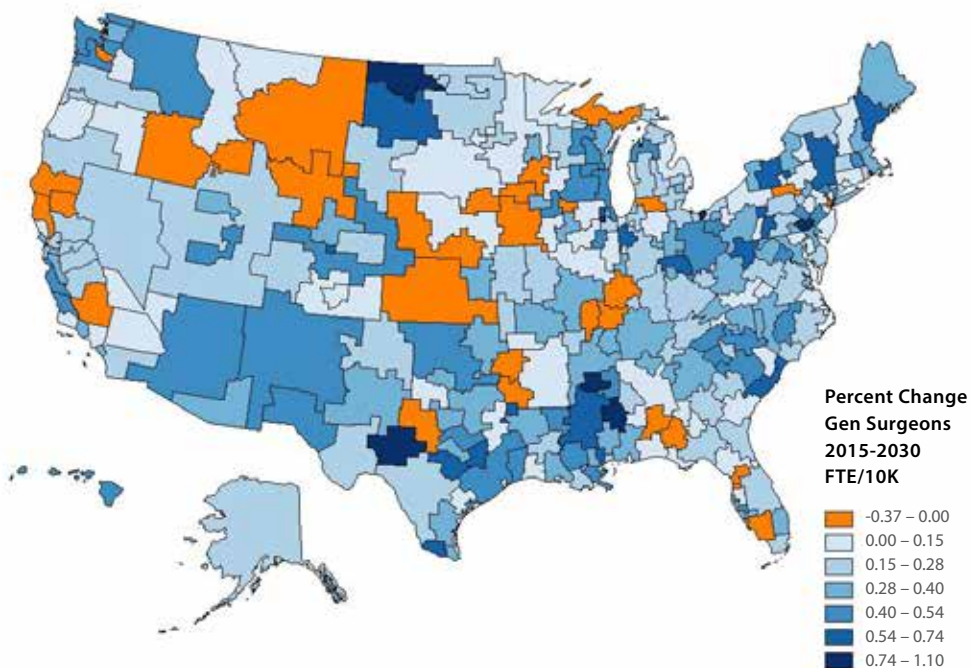


Figure 10. Percent Change in Surgeons (Excluding Subspecialists) per 10k Population, 2015–2030



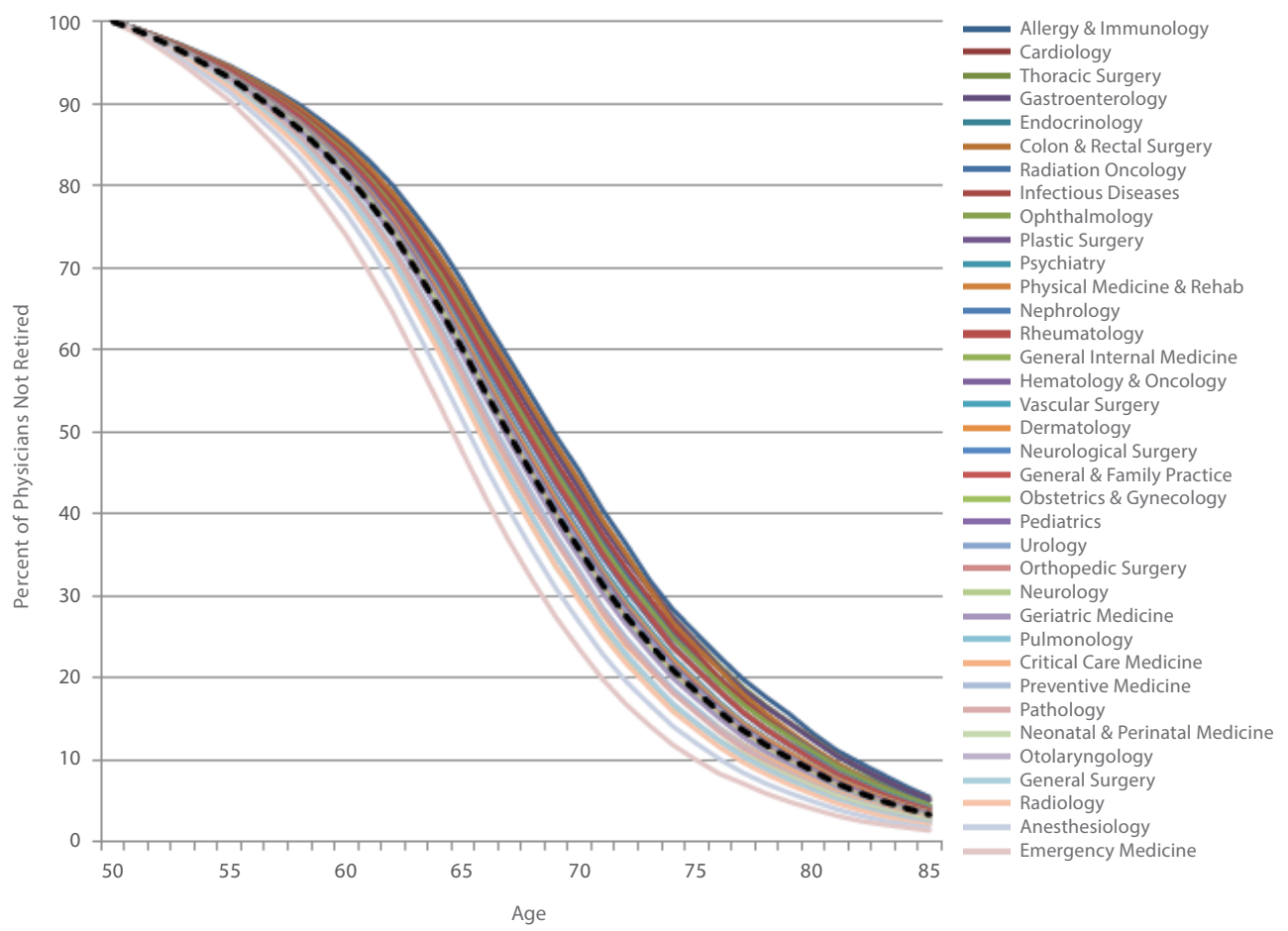


CONCLUSIONS

The analysis and discussion presented here suggest that there will be a decline in the number of general surgeons per population in the U.S. by 2030. This decline in access is less than other projections anticipate but given the agreement in the direction of the trends, we can be relatively confident in a future scenario that there will be fewer surgeons when compared with the population in the coming decades. The implications of this drop in the ratio may be tempered by changes in the volume of surgery as recent trends suggest or exacerbated by an increase in the need for surgery based on the aging profile of the population. The short- and medium-term futures point to a growing problem for access to general surgery in the U.S.

Appendix A. AAMC Retirement Assumptions

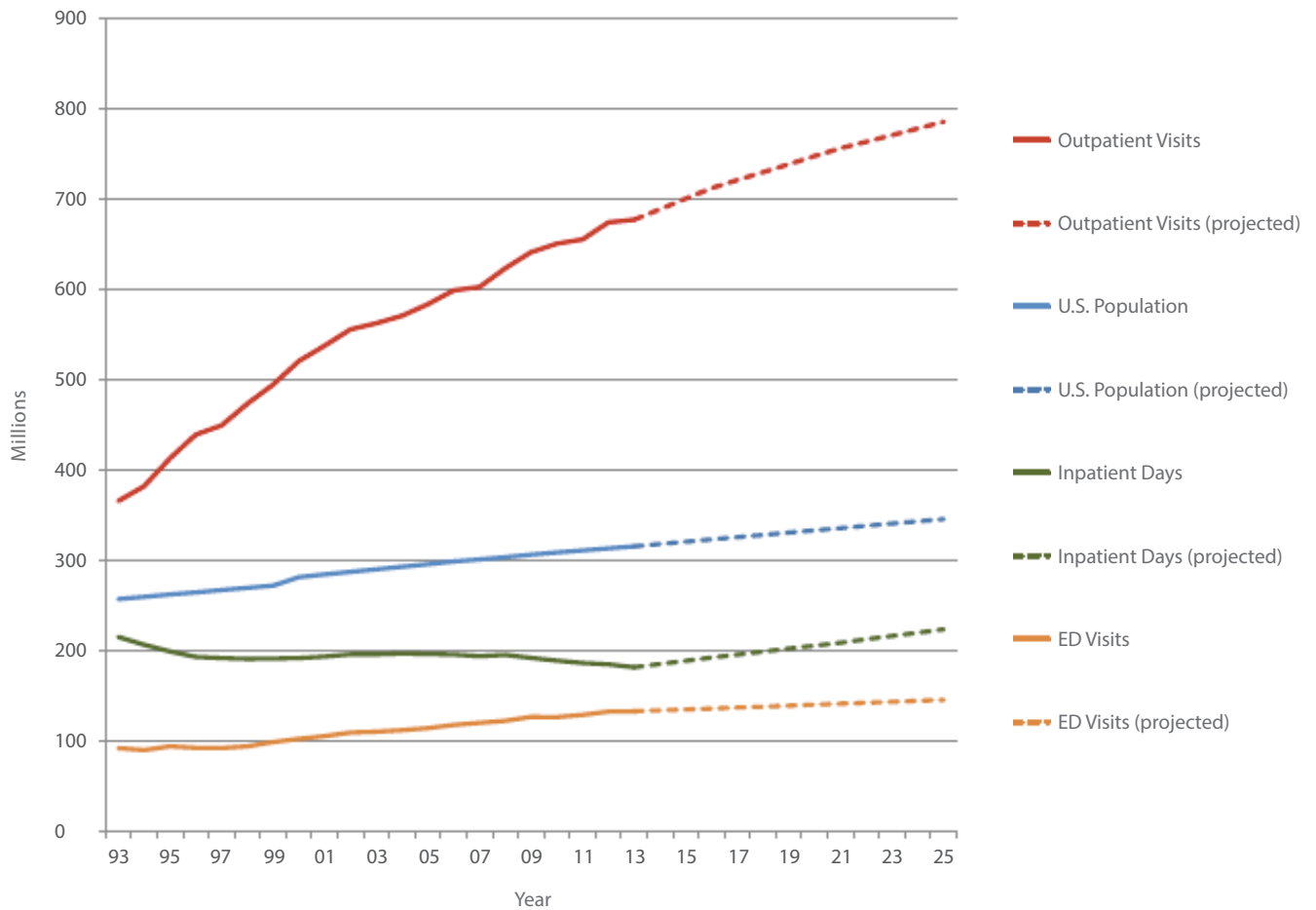
Exhibit A-4: Male Physician Retirement Patterns by Speciality and Age Cohort





Appendix B. AAMC National Trends in Hospital Care

Exhibit 12: National Trends in Hospital Care: 1993–2013, Projected to 2015



Source: IHS Health Workforce Model Documentation. Version 4.4.2016, page 18.

Appendix C. AAMC Definition of Surgical Specialties

General surgery, colorectal surgery, neurological surgery, obstetrics and gynecology, ophthalmology, orthopaedic surgery, otolaryngology, plastic surgery, thoracic surgery, urology, vascular surgery, and other surgical specialties.

AAMC 2016 Report, page 1, footnote 3.



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